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BRITISH MEDICAL JOURNAL

LONDON SATURDAY OCTOBER 24 1942

SOME ASPECTS OF CARDITIS*

BY

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Physician to the National Heart Hospital

I shall describe in this paper certain symptoms and signs which have helped me in the management and treatment of patients, particularly children, with rheumatic heart disease. I have also some observations to make on prognosis, based on the after-history records of children over a 10-years period.

The symptom-complex of rheumatic fever does not present a uniform clinical picture. There is a monocyclic type with pyrexia, toxaemia, sweating, leucocytosis, and migrating polyarthritis; the heart may not be affected, and recovery is complete after a week or ten days of acute illness and three weeks of convalescence. In some these acute symptoms develop after a throat infection and two or three weeks of low-grade fever. There may be a second similar cycle of symptoms without cardiac involvement. Some have a persistent irregular temperature not rising above 100° or 101°, and there are rare cases with hyperpyrexia (Coburn, 1931).

Fever is the most constant of rheumatic phenomena. There may be no arthritis and no cardiac or other visceral manifestations of infection. Tachycardia, like pyrexia, is evidence of a general infection, and not necessarily due to the cardiac lesion; its relation to active carditis, except in advanced disease, may not be that of infection of heart muscle or valve, but the indirect effect of toxaemia on heart rate.

Temperature and Pulse

The temperature and pulse chart is an index of active rheumatic infection; it is not a record of the degree of cardiac damage. There are rare cases of hyperpyrexia in children, it is true, with severe carditis, and rapid heart action is common in heart failure; but high fever and a much-accelerated pulse with slight or no structural disease of the heart are not uncommonly associated. The case history of a boy of 6 illustrates this lack of parallelism between pulse rate and structural change. Three weeks after scarlet fever he developed pyrexia and a tachycardia of an unusually high rate with sinus rhythm; the heart was not enlarged, a systolic murmur audible over the mitral area was heard for the first time, and there was a profuse growth of haemolytic streptococci from septic tonsils. He was given sulphanilamide, and the temperature was normal in two days. He was discharged from hospital a week later with no abnormal heart signs. This was probably not a rheumatic infection, but will serve as an illustration of disturbed heart action of infective origin without structural disease. It is common knowledge that sino-auricular tachycardia is a reaction to infection; with a rise in temperature there is a corresponding increase in the pulse rate. When it is a reaction to heart failure there are always other signs of serious heart disease. In cardiac rheumatism active infection is more often the cause of a persistent rapid regular heart action at rest over a long period than myocardial insufficiency.

The sleeping pulse rate may be a guide to infection, but cannot be used to distinguish infection from heart failure as a cause of tachycardia, for in both conditions the sleeping pulse rate is raised, and approaches more closely the alert rate than in patients not actively infected or in failure. The pulse rate after exercise is increased by infection and by heart failure; this exaggerated reaction of heart rate may continue after the infection is quiescent and after recovery from heart failure. There are other factors involved in the response to effort which make the pulse rate after exercise an uncertain guide to infection or cardiac reserves. In early mitral stenosis, early aortic incompetence, and effort syndrome the rise in pulse rate after exercise may be the same, and is of little value in differential diagnosis. Tachycardia may be caused by nervous influences, infection, and heart failure; as an isolated sign it is unreliable evidence.

Dyspnoea

Dyspnoea after effort may be a symptom of infection, structural disease, debility, an abnormal nervous system, or some other quite different pathological process. Active rheumatic infection is usually absent when there is a valve lesion without enlargement of the heart. Few patients with either active or quiescent rheumatism complain of breathlessness at rest unless they have signs of heart failure. When these signs are absent, and the respiratory rate is raised, a heart lesion is not the cause.

When the heart with mitral or aortic disease is much enlarged, undue breathlessness after exercise, if there is no other known cause, is of cardiac origin. There is some difficulty in assessing this symptom when the valve lesion is not associated with an increase in the size of the heart; the myocardium has suffered slight injury, and carries an extra burden from the valve defects, but its reserve force is sufficient to meet the demands imposed on it by moderate exercise. Neurogenic influences may be the cause of the breathlessness, and not infrequently exercise tolerance is normal when these have been removed. The difficulties in dissociating breathlessness from the heart are much less when the valvular signs are of an equivocal nature; the systolic murmur as an isolated sign can be placed in this category.

Precordial pain is a common complaint of the patient with an inflammatory lesion of the heart; it is felt at rest, occurs more often after effort, and closely resembles the pain of effort syndrome. It is not anginal in character or distribution, and can easily be distinguished from the pleuropericardial pain of pericarditis by the cardiac signs. The precordial ache is a symptom of minor value in the diagnosis of structural disease.

Toxaemic Signs

There are signs of toxaemia which are not peculiar to a rheumatic infection but should nevertheless be treated with the greatest respect, for they serve as indirect evidence of structural change which may not be revealed by the heart signs. Pallor may be regarded as an important sign of infection in a rheumatic subject. A secondary anaemia of slight or moderate degree with a low-grade leucocytosis is the blood picture one expects to see in the active phases of carditis. It may develop rapidly, and the percentage of haemoglobin and

* Part of the St. Cyres Lecture for 1942, delivered on June 16, 1942.

the number of red corpuscles may reach extremely low levels, with anisocytosis and poikilocytosis, and with the colour index in most cases below unity.

A girl aged 10 was admitted to hospital under my care 11 years ago in congestive failure, with moderate enlargement of the heart, aortic regurgitation, mitral stenosis, pericarditis, fever, and other signs of a rheumatic infection. The blood counts revealed a severe and progressive anaemia. The red blood cells fell to 2 millions, and the haemoglobin to 30%, with a colour index of 0.75; there were anisocytosis, poikilocytosis, and nucleated red cells. She was given liver by mouth in large quantities; she liked it and may owe her recovery to this strange taste. The red cell count rose to 5 millions and the haemoglobin to 90%. The tonsils were enucleated a year later. She now leads an active life, works in a munition factory, can walk four miles comfortably, and was married last year.

There may be rapid wasting, gradual but steady loss of weight, or failure to gain weight. This reaction of the body weight to infection will be influenced by the virulence of the infection or resistance to it, or such other factors as exercise, vomiting, diet, conditions of rest, and the age of the patient. The weight chart is a more accurate record of infection in children than in adults. The sedimentation rate is raised in active rheumatism, as in other infections, and may remain high when other signs of activity can no longer be detected. A very high rate is evidence of a severe infection. A low rate may be expected in the non-active phases of rheumatism. The rate falls with the onset of congestive failure, and is affected by the degree of anaemia; it is raised in thyrotoxicosis and in other diseases. It is a less reliable sign of infection in chorea than in other forms of rheumatism; it is comparable to the pulse rate, temperature, and weight charts in distinguishing between active and non-active carditis; it bears a close relation to the development and disappearance of nodules. Subcutaneous nodules and arthritis are characteristic phenomena of rheumatic activity, but they are also tissue reactions of rheumatoid arthritis, and cannot therefore always be accepted as unequivocal evidence of juvenile rheumatism. The absence of these signs does not exclude active infection.

Diagnosis of Active Carditis

I have so far described some important signs of rheumatic activity without reference to cardiac signs. It has been my object to show that it is possible, from a study of the reaction of the body as a whole to infection, to distinguish between the active and the quiescent phases of carditis. The correlation of these signs with those of structural disease of the heart is essential as a basis for prognosis and treatment. The diagnosis of active carditis from the cardiac signs alone is one not easily made. The disease may progress from recurring infection without any change in the quality of the endocardial murmurs. It is difficult to recognize reactivation of a chronic valve lesion from an acute infection, whether the signs are those of mitral stenosis, aortic incompetence, or mitral regurgitation. The development of a diastolic murmur not hitherto audible is an indication that inflammatory changes are taking place in the valve. The development of an apical systolic murmur has less pathological significance. It may be a sign of endocarditis, or a functional reaction to infection. The loud harsh murmur with slow heart rate is more often organic, but the soft bruit accompanying an overacting heart may be due to structural damage. The endocardial murmurs are unreliable signs of active carditis. The friction rub of pericarditis in the course of a rheumatic infection is unequivocal evidence of active structural damage to the myocardium. A wrong diagnosis of aortic incompetence is a not uncommon error, occasionally with grave consequences.

One expects to find some cardiac enlargement in acute rheumatic myocarditis; a close parallelism undoubtedly exists between acute rheumatic infection and an increase in the size of the heart. In a fair number of cases there is no enlargement, and other signs must be found before cardiac involvement can be diagnosed. Those who maintain that the heart is always enlarged when it has been attacked by rheumatism may have been misled by placing too much reliance on the uncertain palpable and percussion outline of an overacting heart. Even an *x*-ray examination has its limitations in determining slight changes in the shape and size of the heart.

The development of enlargement of the different chambers of the heart, of the aorta, and of the pulmonary artery can be determined by the radiological method, now regarded as part of a systematic examination of the cardiovascular system. Enlargement of the heart in the course of a rheumatic infection is a sign of myocardial injury; it is an early response to this infection, and is likely to be progressive when the rheumatic process is active. The size of the heart is related to the type of the initial infection. One expects to find the earliest increase in size, and the largest heart, among those who have had a severe attack of rheumatic fever. A mild infection may cause a valve lesion with little or no enlargement, and remain stationary in a long quiescent period of the disease. Enlargement is also a reaction to the extra load which the heart has to carry as a result of a valve defect. Changes in the shape and size of the auricles and ventricles may be a quick response to rapidly developing aortic regurgitation, or the gradual effect, from strain, of the slow sclerosing process of mitral stenosis. The degree of enlargement is a more reliable index of the virulence of the infection than is the valve deformity. Progressive enlargement is a more valuable sign of active infection than is a change in the character of the murmur.

Heart-block

Electrocardiographic studies have demonstrated that in a large proportion of patients with active carditis there is a lengthening of the auriculo-ventricular conduction time. Cohn and Swift (1924) found that 84% of their cases with rheumatic heart disease showed some increase in the P–R interval. Keith's figures are approximately the same in those with carditis, and more than 50% in cases with chorea or arthritis without other signs of carditis (Keith, 1938). He concludes from his observations on the effect of atropine on the P–R interval that the mechanism responsible for the delay in conduction in all degrees up to complete heart-block is overstimulation of the vagus, and suggests that the exciting cause is the overactivity of the vagal nerve endings in the heart. Lengthened conduction may outlast all other manifestations of active infection for months. It is difficult to assess the significance of varying grades of heart-block in these circumstances. An arrhythmia of this type may be evidence of a localized pathological process in the region of the bundle, and a sign of active carditis; or it may be the residual effect of past rheumatism, a static situation not necessarily changing, like a murmur or enlargement of the heart. Transient partial heart-block can occur in association with vasovagal syncope; it may be a vagal effect without anatomical changes in the myocardium. The following two case records will illustrate how difficult it sometimes is to distinguish between active infection and residual myocardial damage on the evidence of heart-block.

Miss H., aged 20, had tonsillitis in July, 1939, and in August had well-developed symptoms and signs of rheumatic fever. In November there were no abnormal heart signs. In December the electrocardiogram showed heart-block with dropped beats, with no delay in conduction time after an exercise test and after atropine; the leucocytes were 11,200 per c.mm. and the sedimentation rate 5 mm. an hour. A diagnosis of active carditis was made on the evidence of heart-block and the history of recent rheumatism.

The other case is that of a young man aged 22. He had fainted in the past but had no return of this symptom for three years. His complaint at the time of examination was epigastric pain before meals. There was no history of rheumatism or sore throat. The heart was not enlarged and there were no murmurs. The electrocardiograms while in hospital showed partial heart-block with dropped beats and no delay in conduction after exercise and atropine; right axis deviation was present. There was no leucocytosis, and the sedimentation rate was not raised. Was heart-block in this case an isolated sign of active infection or residual damage from past infection? I did not think he had active carditis.

The development of auricular fibrillation is of great clinical importance, for it influences the course of rheumatic heart disease in the direction of heart failure and is therefore in close relation to the cause of death. It is a late manifestation of the rheumatic process, with an incidence of more than 40% among those who die, and the duration of life after its onset is less than three years in a large proportion of cases (De Graff and Lingg, 1935). Nutritional changes in the myocardium may be

the cause of this disturbance of rhythm; the part played by active infection as a causative factor in its production has not been demonstrated. There are some who hold the view that auricular fibrillation is sometimes an effect and not the cause of heart failure (Luten, 1936).

Interrelation of Heart Failure and Rheumatism

When we consider heart failure in relation to rheumatic infection there is a general recognition that these two conditions are interlocked. Acute or subacute rheumatic activity must be regarded as the chief cause of myocardial failure in rheumatic heart disease. Progressive enlargement is a constant feature of heart failure; active infection may be responsible for progressive increase in size and failure. There are, among other contributory factors involved in these changes, a progressive valve lesion and auricular fibrillation; both impose an extra burden on the heart and are closely linked with activity of infection. The heart failure of bacterial endocarditis is good evidence in support of the view that active infection plays a more important part in heart failure than mechanical strain.

Bacterial endocarditis is not evidence of rheumatic activity: its relation to the phenomena of rheumatic disease is accidental (Coburn, 1931). It is a blood-stream infection which may present symptoms and signs easily distinguished from those of cardiac rheumatism. The temperature, pulse rate, and blood picture are not always distinguishing features of the two types of infection; embolic phenomena may be absent, the fingers not clubbed, the spleen not palpable, and the blood sterile. In children, bacterial endocarditis is extremely rare, and consequently the difficulties of differential diagnosis do not often arise.

Prognosis of Carditis

I have some observations to make about prognosis, based on the after-history records of 200 boys with carditis, average age 11 years, over a 10-year period. These children were under my care in a special convalescent home, and the basis of treatment was rest in bed when there were symptoms or signs of active infection; those without active infection were allowed to play games regulated to avoid undue breathlessness and over-fatigue. There are two consecutive groups of 100; in one group (Table I) the average stay in the home was four and a half months, and in the other (Table II), six months. The 200 cases are also dealt with as one group (Table III) by combining Tables I and II. They are classified as valve lesions in Tables I to III; Table IV gives the degree of enlargement of cases in Table II. In Tables I to IV the numbers known to be alive or dead at the end of the tenth year are recorded.

TABLE I.—*Results of 100 Cases under Observation for 10 Years*

Disease	Cases	Living	Dead	Untraced
Mitral disease: systolic murmur	57	36 (63%)	18 (32%)	3
Mitral stenosis	23	8 (35%)	14 (61%)	1
Aortic regurgitation and mitral stenosis	14	7 (50%)	6 (43%)	1
Aortic regurgitation	4	2 (50%)	2 (50%)	0
Non-valvular	2	1 (50%)	0	1
Total	100	54%	40%	6%

TABLE II.—*Results of 100 Cases under Observation for 10 Years*

Disease	Cases	Living	Dead	Under Observation less than 10 Years
Mitral disease: systolic murmur	32	18 (56%)	8 (25%)	6
Mitral stenosis	34	16 (47%)	12 (35%)	6
Aortic regurgitation and mitral stenosis	24	9 (37%)	13 (54%)	2
Aortic regurgitation	6	3 (50%)	1 (17%)	2
Non-valvular	4	3 (75%)	0	1
Total	100	49%	34%	17%

TABLE III (*Tables I and II combined*).—*Results of 200 Cases under Observation for 10 Years*

Disease	Cases	Living	Dead	Untraced
Mitral disease: systolic murmur	89	54 (60%)	26 (29%)	9
Mitral stenosis	57	24 (42%)	26 (46%)	7
Aortic regurgitation and mitral stenosis	38	16 (42%)	19 (50%)	3
Aortic regurgitation	10	5 (50%)	3 (30%)	2
Non-valvular	6	4 (66%)	0	2
Total	200	103 (52%)	74 (37%)	23 (11%)

TABLE IV.—*Degree of Enlargement*

Disease	Living						Dead						Grand Total
	Blank	0	+	++	+++	Total	Blank	0	+	++	+++	Total	
Mitral disease: systolic murmur	5	5	9	5		24	1	2	2	3		8	32
Mitral stenosis	3	0	12	6	1	22	1		2	7	2	12	34
Aortic regurgitation and mitral stenosis ..	1	1	4	5		11	1	1	5	4	2	13	24
Aortic regurgitation ..			4	1		5				1		1	6
Non-valvular			3	1		4							4
Total	9	6	32	18	1	66	3	3	9	15	4	34	100
		57%						35%					

TABLE V.—*Under Observation 1-5 Years and 5-10 Years*

Disease	Dead in 1–5 Years						Dead in 5–10 Years					Grand Total
	Blank	0	+	++	+++	Total	0	+	++	+++	Total	
Mitral disease: systolic murmur	1		1	1		3	2	1	2		5	8
Mitral stenosis	1		2	4	2	9			3		3	12
Aortic regurgitation and mitral stenosis ..	1	1	4		2	8	1	1	4		6	14
Aortic regurgitation ..				1		1						1
Non-valvular								3	1		4	4
Total	3	1	7	6	4	21	3	5	10		18	39

The figures in Table I show that 54% are living, 40% dead, and 6% untraced. In Table II 49% are living, 34% dead, and 17% untraced. In Table III 52% survive, 37% died, and 11% are untraced in this 10-year period.

In Table I 63% with mitral systolic murmurs are living and 32% dead; 35% with mitral stenosis are living and 61% dead; 50% with aortic regurgitation and mitral stenosis are living and 43% dead; with aortic regurgitation alone 50% are living and 50% dead.

In Table II 56% are living and 25% dead in the systolic murmur group; 47% with mitral stenosis are living and 35% dead; with aortic regurgitation and mitral stenosis 37% are living and 54% dead; with aortic regurgitation alone 50% are living and 17% dead.

Table III shows 60% living and 29% dead with mitral systolic murmurs; 42% living and 46% dead with mitral stenosis; 42% living and 50% dead with aortic regurgitation and mitral stenosis; 50% living and 30% dead with aortic regurgitation.

In Table IV it will be seen that 57% with slight or no enlargement are living and 35% are dead at the end of 10 years.

Table V shows that 21 died within 5 years and 18 died in the second 5-year period.

Summary and Conclusions

Observations are made on the prognosis in carditis, based on the after-histories of 200 boys, average age 11 years.

Rather more than one-half of the children with carditis are alive and slightly more than one-third are dead 10 years after from 4½ to 6 months' treatment in a special convalescent home. The larger number of untraced cases in Table II (17% as against 6% in Table I) prevents one from concluding that the prognosis is more favourable when the stay in a convalescent home is increased from 4½ to 6 months.

Rather less than half of those who die within 10 years live longer than 5 years after treatment in a special convalescent home.

The death rate in children with mitral stenosis and aortic regurgitation is much higher than in those with mitral systolic murmurs, over a 10-year period.

Children with moderate or considerable enlargement of the heart are less likely to live 10 years than those with slight or no enlargement.

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REACTIONS FOLLOWING TRANSFUSIONS OF STORED BLOOD

BY

R. ARDEN JONES, M.B., B.S.

White Lodge E.M.S. Hospital, Newmarket

Two cases of blood transfusion reaction not due to incompatibility are here recorded. Though there is a lack of pathological data, they present such unusual features as to justify detailed clinical notes. The therapy employed in these cases invites criticism from many aspects. It is described rather fully, however, since the reaction to these measures involves interesting physiological considerations.

Case I

Woman aged 30. Six children. Rheumatic fever in June, 1940. Admitted for colpoperineorrhaphy. Haemoglobin 66%. Group A (II). Blood transfusion with Group O (IV) blood 4 days old, which was directly matched with the patient's serum and found to be suitable.

Nov. 19.—10.45 a.m.: Transfusion drip started. 11 a.m.: Complained of headache and vomited a little; chest felt tight. 11.30 a.m.: Felt cold and was a little shivery. At 12 noon, when 3/4 pint had been given, she complained of pain in the chest. The transfusion was stopped. Shortly afterwards colour was poor and pulse rapid and thready, 140 a minute. Resuscitation measures; omnopon gr. 1/3, heat cradle, and warm drinks were given, but vomiting became troublesome. Temperature rose to 102° at 2 p.m. and condition did not improve, the pulse remaining rapid and thready. The bed was blocked and rectal fluids were given. Coramine was administered repeatedly. Blood taken from a vein was sterile after 5 days' culture. At 10 p.m. there was still no improvement. Lips cyanosed, eyes sunken, extremities icy, tongue dry, mentality clear, exposed veins empty, pulse almost imperceptible. Heart rate 140 regular: B.P. 40 systolic. Lungs clear. At 11.30 p.m. intravenous saline was started, 2 pints being given rapidly.

Nov. 20.—After the saline the B.P. rose to 75/55 at 12.25 a.m. and pulse was countable at 126. A third pint was run in more slowly, and at 4 a.m. the B.P. had fallen to 60/45 and later to 50/35. One pint of plasma was then given rapidly (20 minutes), and at 5 a.m. the B.P. was 55/35. Further intravenous saline was given more slowly. Digoxin 0.5 mg. was injected intravenously, and D.O.C.A. 5 mg. was given. Five hours later, at 10 a.m., the patient's condition was still that of profound collapse; T. 99°, P. 120, R. 20, B.P. 50/35. She was restless, sunken-eyed, and a little cyanosed; veins empty, a few crepitations at right base, no icterus. No urine had been passed since the transfusion reaction had occurred, nearly 24 hours previously. Total intravenous fluid: 4 pints saline, 1 pint plasma. At 3.30 p.m. 0.25 c.cm. pituitrin was given, and repeated in half an hour; the pulse, which had remained steady at 120 though poor in volume, fell to 100, but had risen to 120 by 6 p.m. Catheterization produced 7 oz. of highly coloured urine: albumin—moderate cloud; no blood, haemoglobin, or bile; pus, *B. coli*, and an occasional R.B.C. This urine may have been in the bladder since the transfusion was started. W.B.C. 23,000, R.B.C. 3,950,000, Hb 70%, blood urea 80 mg./100 c.cm. At 12 midnight, 24 hours after the intravenous saline had been started and over 36 hours since the reaction occurred, B.P. was still 55/35. T. 100°, P. 120, R. 28; hiccup, retching, very restless, neck veins not filled above the angle of Louis, lungs clear, no oedema. Eucortone had been given without improvement.

Nov. 21.—At 2.30 a.m. 0.25 c.cm. pituitrin was given, and repeated in half an hour as before; again the pulse fell promptly to 100. Respirations at this time had returned to 20. At 10 a.m., after a restless night, patient was slightly delirious. Hiccup persistent; P. 90, R. 30, B.P. 60/30. Slight dyspnoea, rhythm intermittent. Venous pulsation at root of neck but veins not filled above the level of the angle of Louis. Few basal rales. No oedema. Marked rigidity of all the limbs. Two pints of saline had been given in the previous 12 hours, making 11 pints in about 36 hours since the drip was started. Intravenous drip was discontinued. Urine, 4 oz., passed spontaneously at 6 a.m. (The first urine definitely secreted since the reaction had occurred—44 hours.) It contained albumin (heavy cloud); no blood or haemoglobin; pus cells but no casts in centrifugal deposit. Ephedrine gr. 1/2 was given by injection 3 times between 10.30 a.m. and 2 p.m., and thereafter gr. 1/4 every four hours. Urine, 6 oz., was passed spontaneously at 3 p.m. At 6 p.m. there was definite clinical improvement. Pulse had remained between 88 and 100 all day; B.P. 60/35, R. 24. At 12 p.m. pulse rate rose to 120, dyspnoea increased, patient became restless and delirious; B.P. 75/40, R. 30. Neck veins were not filled above the level of the angle of Louis. No oedema. Early failure was suspected, but ephedrine gr. 1/4 was continued 4-hourly, digoxin being given, 0.5 mg. b.d.

Nov. 22.—At 12 noon, 72 hours after the transfusion, patient was restless and wandering mentally. T. 99°, P. 120, R. 30. Extensive herpes of lips, mouth sore, mucosa ulcerated, tongue dry and furred. No icterus. Urine, 14 oz., was passed during the night. Casts, blood, and haemoglobin were absent. During the day the pulse rate fell to 80 at 2 p.m. and 66 at midnight, becoming grossly irregular. B.P., however, rose from 64/40 at 12 noon to 75/45 at 3 p.m. and 90/60 at 12 midnight. Definite congestive failure was now present, with 1½ in. of venous filling in the neck. Respirations 36–40; slight oedema of ankles and sacrum. The cardiac irregularity was considered to be due to auricular fibrillation in a fully digitalized patient. Ephedrine and digoxin were stopped. Urine passed during day measured 21 oz.

Nov. 23.—Diarrhoea with incontinence of faeces now occurred. Urine was being passed freely—65 oz. in 24 hours. Slow fibrillation continued, but signs of congestion had cleared. Hiccup was persistent. There was marked bruising of the skin at the site of injections and very slight icterus was thought to be present. Van den Bergh's reaction gave a very weak indirect positive. Blood urea 180 mg./100 c.cm. and urine urea 1.2%. R.B.C. 4,610,000, Hb 80%, W.B.C. 12,300, polys. 85%.

Nov. 25.—Diarrhoea was still persistent though fluids alone were being given by mouth. Marked dehydration was present and fibrillation at 80 a minute continued. B.P. 100/50. No icterus. At midnight dehydration was still pronounced, and patient was very reluctant to take fluids because of vomiting and ulceration of mouth and throat. I.V. saline was started.

Nov. 26 and 27.—Intravenous saline was continued, 16 pints being given in 48 hours. Urine passed during this period was 9½ pints in addition to that voided during a period of faecal incontinence. No sign of congestion or oedema developed, and on the 27th the pulse was regular at 90. Thereafter the patient recovered rapidly, and on the 29th B.P. was 115/75 and blood urea 50 mg./100 c.cm. Urine showed trace of albumin; pus cells and *B. coli* still present. No casts.

On Dec. 8 urea clearance was 70% of normal maximum clearance. Blood urea 36 mg./100 c.cm.

Case II

Soldier aged 27. Admitted Dec. 25, 1941, with gunshot wound of left thigh. During the week after admission repeated secondary haemorrhages occurred, which were treated by packing of the wound and compression bandages. Blood pressure ranged between 110/70 and 135/80. Temperature up to 100°.

On Jan. 1, 1942, R.B.C. 2,750,000, W.B.C. 26,000, polys. 80%, Hb 50%. Group O (IV).

Jan. 2.—At 5.45 p.m. drip blood transfusion was started with Group O blood (citrated)—three days old—which had been directly matched with the patient's serum. No. 1 bottle (2/3 pint of whole blood) was given at a fast drip 60–100 a minute. At 6.10 p.m. severe rigor after about 1/3 pint. Pulse 120. Blood drip reduced to 10–15 a minute. Adrenaline 5 minims and morphine gr. 1/4 given. At 6.30 p.m. patient was shivery and complained of headache and pain in back of neck and chest. Vomited twice. No. 1 bottle was replaced by No. 2 bottle (though 1/2 pint still remained in No. 1), and this had run in by 8 p.m. without further reaction. Pulse remained at 120, but condition seemed better. The remainder of No. 1 bottle was then given at 40–60 a minute and the transfusion was completed by about 9.30 p.m. without further incident. At 10 p.m.: Temperature 105°, pulse 160 and thready. Sweating profusely, vomiting at intervals and complaining of intense thirst. Coramine was given and rectal saline started.

Jan. 3.—During the night he was restless and slept for short intervals only. He took large quantities of water by mouth and vomited repeatedly. Pulse fell to 100 at 5 a.m.; volume improved slightly. Temperature 99°. From 5 a.m. pulse rose gradually; at 9 a.m. he was pale, grey, and the pulse was imperceptible. He was again given coramine. At 10 a.m.: T. 97°, P. 104, R. 28; pale and restless; pulse volume poor; B.P. 50 systolic; no dehydration;

no icterus. There had been no bleeding from the wound. At 11.30 a.m. 4 oz. of urine was passed spontaneously, the first since onset of reaction 18 hours previously (16 oz. had been passed 2½ hours before the reaction occurred); S.G. 1020, trace of albumin; no blood or haemoglobin. At 2.30 p.m. condition unchanged; P. 120, B.P. 50 systolic, R. 26. Intravenous saline with 5% glucose started by a drip adjusted to 40 a minute. At 6 p.m. patient was still restless and was vomiting ; T. 99°, P. 130, R. 36, B.P. 62/40. A little over a pint of saline had been given, but no further urine had been passed, though 85 oz. of fluid had been taken by mouth in the preceding 12 hours and only 18 oz. had been vomited. There was no sign of congestion despite slight dyspnoea and raised respiration rate. At 10 p.m. his condition had deteriorated further: B.P. 60/40, T. 98°, P. 140, R. 40. 36 oz. of I.V. saline had been absorbed since the onset. 1 pint of fresh blood (group IV) was then substituted for the saline and run in slowly at 10 drops a minute.

Jan. 4.—During the night pulse fell to 106 though respirations remained at 40. Patient was delirious at times and very restless. Temperature 99°. At 4 a.m. (34 hours since onset of reaction) 14 oz. of urine passed. It contained albumin (moderate cloud) ; no haemoglobin; no R.B.C.s, occasional W.B.C.; fair number of granular casts. At 10 a.m. 1 pint of blood had been absorbed and the remainder of the original 2 pints of saline was given slowly. Intake for preceding 12 hours, 60 oz. by mouth; urine 14 oz.; vomit *nil*. Patient was restless and coughing repeatedly. No icterus. T. 98°, P. 120, R. 44, B.P. 80/60. At 12 noon a second pint of fresh blood was given at 15 drops a minute. At 4.30 p.m. B.P. 80/60; P. at 120 all day; R. 36-40; T. 99°. General condition slightly improved. Patient, however, looked extremely ill, pale, sunken-eyed, but not dehydrated. Persistent cough. Intake (12 hours) 58 oz.; output of urine 16 oz. At 10 p.m. signs of consolidation were detected at the right base and sulphapyridine was given. At 12 midnight the second pint of fresh blood had been absorbed and the drip was continued at 10 a minute with saline.

Jan. 5.—At 10 a.m.—64 hours since onset of reaction—intravenous saline was discontinued. Only 10 oz. had been given in the preceding 10 hours. (Total fluid given by this route in 44 hours was 2 pints blood and 2½ pints saline.) Intake by mouth 36 oz., urine output 19 oz. T. 100°, P. 116, R. 40, B.P. 105/70. Radiograph of chest confirmed consolidation at right base. Blood urea 130 mg./100 c.cm. W.B.C. 38,000—85% polys. Urine contained albumin and casts but no red cells or haemoglobin. At 5 p.m., T. 100°, P. 120, R. 40. Congestive cardiac failure was present with 2 in. of venous filling in the neck. B.P. 115/80. Liver just palpable; slight oedema. Extensive herpes of lips. Dry sore tongue, heavily furred. No icterus. Purulent sputum and signs of pneumonia at right base also noted. Diuresis had begun during the day, and 82 oz. of urine was passed during the 12 hours.

Jan. 6.—The patient's condition had materially improved. Signs of congestion were fewer and diuresis continued. Sulphapyridine was continued up to a total of 25 g. Blood urea 130 mg./100 c.cm.

The patient thereafter proceeded to make an uneventful recovery. On Jan. 12 blood urea was 45 mg./100 c.cm., and concentration of urea in morning specimen of urine 1.7%. On Jan. 14 Hb 80%, R.B.C. 4,000,000; urine contained no albumin, and no abnormal elements were present in the deposit.

Comment

The similarity of the reaction in these two cases is striking, and that they are unusual has been confirmed by both Prof. Arthur Ellis and Dr. Janet Vaughan (personal communications), who agree that intravascular haemolysis could be excluded. The dominant features were the absence of intravascular haemolysis, the extremely grave condition of the patients for over a week, and the sustained low blood pressure, being no higher than 60 mm. Hg systolic for over 48 hours in Case I. Marked nitrogen retention and a phase of congestive cardiac failure occurred in both cases.

Neither patient had been transfused before. The compatibility of the blood used in each case would seem to be satisfactory. The grouping of donors and recipients' blood was repeated and confirmed, and direct matching of serum from the recipients and cells from the donors was carried out in each case. Moreover, icterus and haemoglobinuria, though anticipated and looked for, were absent. The suspicion of slight jaundice on the fifth day in Case I could not be attributed to primary haemolysis of the transfused blood, and it was noted that there was extensive bruising at the site of repeated subcutaneous injections.

In both cases the blood given was less than five days old. It had been stored in a refrigerator at 4° to 8° C., and was macroscopically normal. No trace of haemolysis was visible above the surface of the sedimented cells, and microscopically the erythrocytes were healthy in appearance. In warming the blood care was taken that it was not exposed to an injurious temperature.

Infection of the blood cannot be excluded. Contamination of a batch of blood taken at another time did occur, though the infected specimens were in every case grossly abnormal macroscopically in under five days, and some 20 samples which were cultured and which appeared normal to the naked eye were not infected. That heavily infected blood may appear normal macroscopically is, however, recognized. Clearly, infection of the transfused blood is a possibility in both these cases, and the negative blood culture from Case I shortly after the onset of the reaction does not exclude this accident.

The nature of these reactions is uncertain, but an increase in the total vascular bed consequent upon a loss of peripheral vascular tone, with or without subsequent loss of fluid into the tissues, can reasonably be assumed. That this resulted from some substance in the transfused blood is probable, but whether this was a toxin of bacterial or other origin or an allergen is speculative. The prolonged duration of the collapse argues against a true anaphylactic reaction. The pneumonia in Case II suggests infection (Whitby, 1942), as does the leucocytosis.

The nitrogen retention would seem to have been the direct result of a loss of glomerular filtration during the period of hypotension, as with the recovery of the blood pressure diuresis set in. Hypertension did not occur at any time.

In the case of the milder reaction (Case II) more protein-containing fluid was given than in Case I, though in the latter excessive quantities of saline had been infused. In both cases a period of congestive cardiac failure occurred coincidently with the recovery of the blood pressure, but *some time* after the intravenous infusions had been stopped. This venous congestion, not directly attributable to a rapid overloading of the circulation with infused fluids, might be explained by the recovery of peripheral vascular tone on a blood volume which had been artificially raised above its normal level. The increased blood volume had previously been accommodated by an increased vascular bed. It is suggested that this occasionally occurs in cases of traumatic shock treated early by transfusion.

The infusion of large quantities of saline and proteinous fluid would seem to be irrational, and was clearly excessive in these cases. Though it certainly aided the circulation by maintaining the blood volume above its normal level it probably made subsequent congestion inevitable. For this reason saline was used in preference to plasma in Case I, but the danger of precipitating pulmonary oedema was thereby obviously increased.

Adrenal cortical extracts were given in Case I as an acute adrenal lesion was feared, but the response to this measure was negligible. Transitory response to pituitrin in Case I appeared definite. Ephedrine, though given in large doses by injection, could not definitely be shown to produce the desired effect, the blood pressure falling almost to its earlier level during its administration. Coramine was not effective. Veritol and other vascular stimulants were not tried.

Pituitrin is known to increase capillary vascular tone. Wenckebach (1932), in studying the effect of pituitrin on the cardiovascular phenomena of beriberi, showed clinically that this drug acts principally by constricting the capillaries. Its use, therefore, in cases such as those here reported would seem to be rational. It was not persisted with, however, for fear of embarrassing the cardiac circulation and so precipitating a fatal issue.

Summary

Two unusual cases of blood transfusion reaction, not due to incompatibility, are recorded, together with a brief commentary. Profound and sustained collapse with subsequent nitrogen retention and congestive cardiac failure occurred in both instances.

I wish to express my thanks to Mr. J. Preston Maxwell and Mr. John E. Rowlands for allowing me to report these reactions in their patients ; to Prof. Arthur Ellis, Dr. Janet Vaughan, and Prof. Ryle for personal communications ; and to Dr. A. Morton Gill and Dr. Leo Pollak for helpful advice and criticism.

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BAGASSOSIS

AN INDUSTRIAL LUNG DISEASE

BY

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AND

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(WITH SPECIAL PLATE)

Bagasse is the term applied to broken sugar-cane after the sugar has been extracted. This formerly waste product of the sugar-cane industry is now employed in the manufacture of board which, besides being an easily worked and durable material, has the property of insulating any cavity lined with it against sound and temperature changes. The many possible applications of these properties in building are obvious. At the present time the material is in demand for war purposes. The bagasse arrives at the board-making factory in open bales, which are then "broken"—i.e., the raw material is further crushed into small fragments. When manufacture was first started in England the bale-breaking was carried out under water. The process was slow, however, and about two years ago machinery was devised for breaking the bales in a dry state that proved to be much more rapid but gave rise to a great deal of dust, some very finely divided, in the air near the machinery.

Bagasse, which is largely composed of fibre, contains about 1% of protein and 5 to 7% of silica. Some of its cellulose content is said to be present in a crystalline form. The rest of the processes through which the bagasse goes are wet, an initial washing probably removing all the protein content, until the finished board is dried in a heated press at a temperature of 200° F. in the centre of the board, which would destroy any remaining protein. It is then cut and trimmed by circular saws, a process which again gives rise to a small quantity of dust containing silica but no protein.

Directly after the installation of the dry bale-breaking machinery, cases of respiratory illness began to appear among the workers engaged in this part of the process—namely, the labourers who fed the bales into the machine and the engineer who supervised its construction and running. No cases of respiratory trouble had previously occurred in the factory. Those workers who are engaged in the cutting and trimming of the finished boards are never affected. As soon as it was realized that the dust liberated at the initial stage of manufacture was injurious, measures were taken to suppress it. These consisted of a water spray and a suction draught applied to the site of its generation, and since the application of them no further cases of illness have occurred among the workers. The clinical features of four of these cases seen and the investigations made upon them are as follows:

Case I

A labourer at the factory aged 19, this patient had always enjoyed good health. There was no history of any chest trouble or of tuberculosis in himself or his family. He began work in the factory in Feb., 1941, and was exposed to bagasse dust as he fed bales into the breaking-machine. Since the end of March, 1941, six weeks before admission to hospital on May 4, he had had increasing shortness of breath and for four weeks a cough with scanty sputum that was sometimes blood-stained. He had been unable to work for ten days before admission.

On examination he was very dyspnoeic at rest, being hardly able to speak, but had only moderate cyanosis. There was occasional cough with a scanty, frothy, sticky, muco-purulent sputum which was sometimes streaked with bood. There was no clubbing. The heart was normal and the blood pressure 140/60. The chest showed poor movement, with rather less on the right side than on the left. The trachea was central. The percussion note was impaired, with distant bronchial breathing in small areas at both bases. Vocal fremitus and vocal resonance were diminished at the right base. A few rales were present at the right base and scattered fine crepitations in all other areas. The abdomen, central nervous system, and urine were normal. A radiograph taken on May 5 (Plate, Fig. 1) suggested bilateral bronchopneumonia of influenzal type.

Progress.—The temperature, which was 100.6° on admission, fell to normal in two days, at which it remained until the ninth day, when remittent fever began, lasting one week. The rest of the course of the illness was afebrile. The pulse rate varied between 104 and 144 and the respirations from 24 to 48 a minute until the patient was well. Cyanosis with extreme dyspnoea persisted for three weeks, then both gradually subsided over the next four weeks. A radiograph taken on June 19 showed an increase in the area of consolidation (Fig. 2). The dyspnoea, which never had an asthmatic quality, was markedly relieved by oxygen, which was kept up continuously by nasal catheter for 51 days. Sulphapyridine appeared to have no influence on the course of the disease. Signs of patchy consolidation persisted in both lower lobes, varying in location and intensity for 7½ weeks, with rales frequently in other areas also. Finally the dyspnoea gradually ceased, oxygen was dispensed with for increasingly longer intervals, the chest began to clear by July 5 (Fig. 3), and the patient became subjectively well. He was followed up as an out-patient, remaining symptom-free, with further resolution of the lung lesions (Fig. 4), and five to six months after this last film was taken was admitted to the Navy.

The sputum was always scanty, muco-purulent, and at times blood-stained. The bacterial flora was varied, containing *M. catarrhalis, Str. viridans,* and fusiform bacilli. *Staph. aureus* was grown on one occasion, and on another pneumococcus Type 14. Tubercle bacilli were not found. The cells in the sputum were epithelial, polymorphonuclear, and lymphocytic. Eosinophils were never present.

The blood count on admission was: red cells, 4,610,000 per c.mm.; haemoglobin 78%; colour index 0.87; leucocytes 11,300 per c.mm.—neutrophils 83%, lymphocytes 14%, monocytes 3%, and no eosinophil cells. Subsequent white counts gave 9,200 and 9,300 cells, with normal differential counts containing 3% and 1% of eosinophils respectively.

Case II

This patient, an engineer aged 37 who had previously enjoyed good health except for an attack of influenza in 1936, had no history of chest illness in himself or his family, none of whom had had tuberculosis in any form. In March, 1939, he started work in the factory, where from Aug., 1939, to June, 1940, he was in intermittent contact with bagasse dust. From June, 1940, to Sept., 1940, he was in continuous intimate contact with the dust, superintending the construction and running of machines for the dry crushing process. In Sept., 1940, he became ill with a chest complaint which was called pneumonia, and was off work for 10 weeks. The symptoms of his illness corresponded to those of Case I—namely, shortness of breath, cough, and scanty sputum. During convalescence he was sent by his doctor, under whose care he had remained at home, to see the Tuberculosis Officer, who reported no P.T. In Nov., 1940, he returned to work, and in December began to be short of breath again. This shortness of breath rapidly and steadily increased so that by Jan., 1941, he was out of breath at the least exertion and was able to work one day only in every three. On Jan. 17, 1941, he attended hospital as an out-patient. On examination there was seen to be early clubbing of the fingers. The chest was kyphotic, with many fine rales in all areas of both lungs anteriorly and at both bases. Physical examination was otherwise normal. A radiograph taken on Jan. 18 (Fig. 5) showed a few apical scars and a little fibrosis in the right midzone. By May, 1941, his shortness of breath was extreme and painful, and he would collapse in the street from walking slowly. In one of these attacks of collapse he was admitted to another hospital, where a radiograph was thought to reveal bilateral apical tuberculosis. After this he continued at home with troublesome shortness of breath until he was admitted to hospital on Nov. 22, 1941.

On examination there was marked dyspnoea at rest with orthopnoea but no cyanosis. Clubbing of the fingers was present. The spine was kyphotic and the thorax rigid, and upon comment being made on this the patient stated that he had been becoming more "round-shouldered" since Jan., 1941. The trachea was central and the percussion note impaired at the left apex both in front and behind, with bronchial breathing and bronchophony. Crepitations were present throughout all areas of the left lung and at the right apex. The heart was

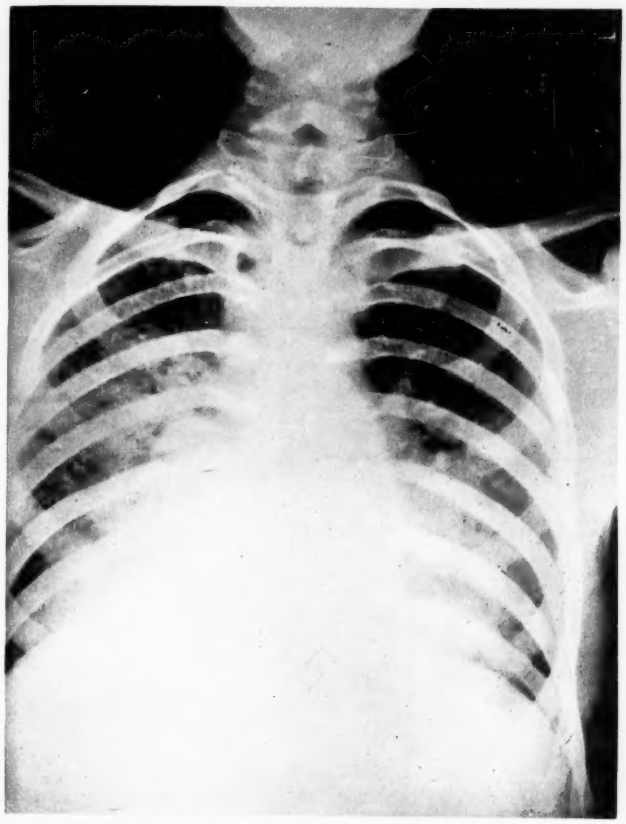

FIG. 1.—Case I (May 5, 1941). Bilateral basal mottling of bronchopneumonic type with enlarged right hilum gland.

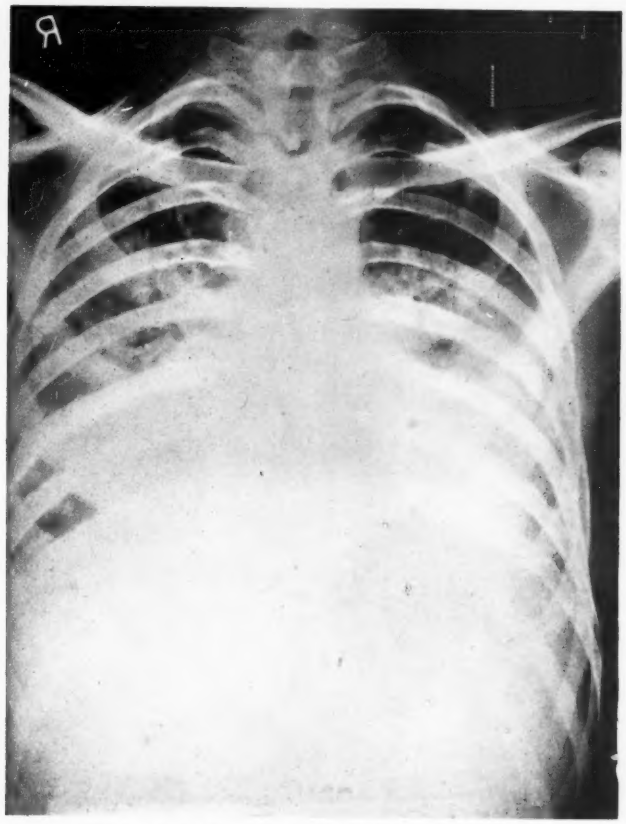

FIG. 2.—Case I (June 19, 1941). Extension of the lesions.

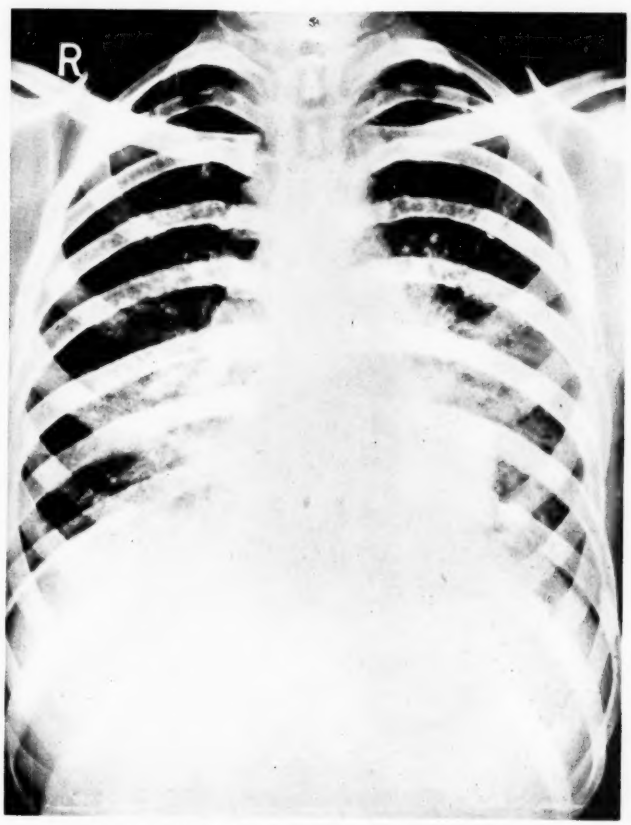

FIG. 3.—Case I (July 5, 1941). Resolution starting.

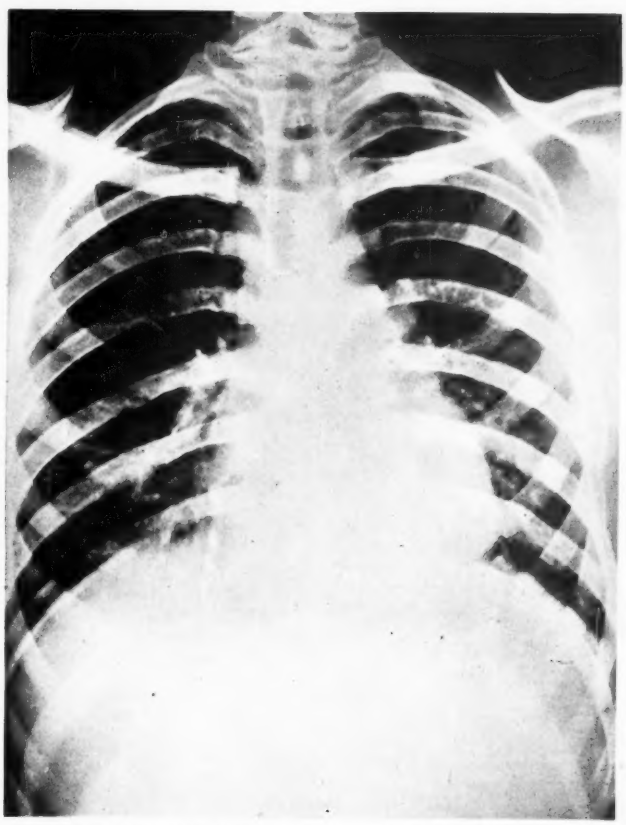

FIG. 4.—Case I (Aug. 29, 1941). Complete resolution of lung lesions except for a little basal striation.

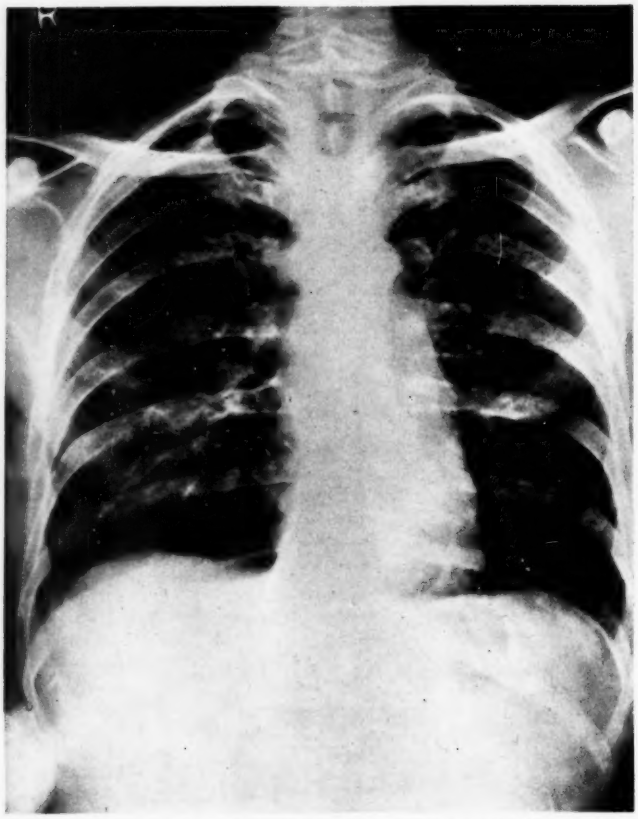

FIG. 5.—Case II (Jan. 18, 1941). A few apical scars and a little fibrosis in the right midzone.

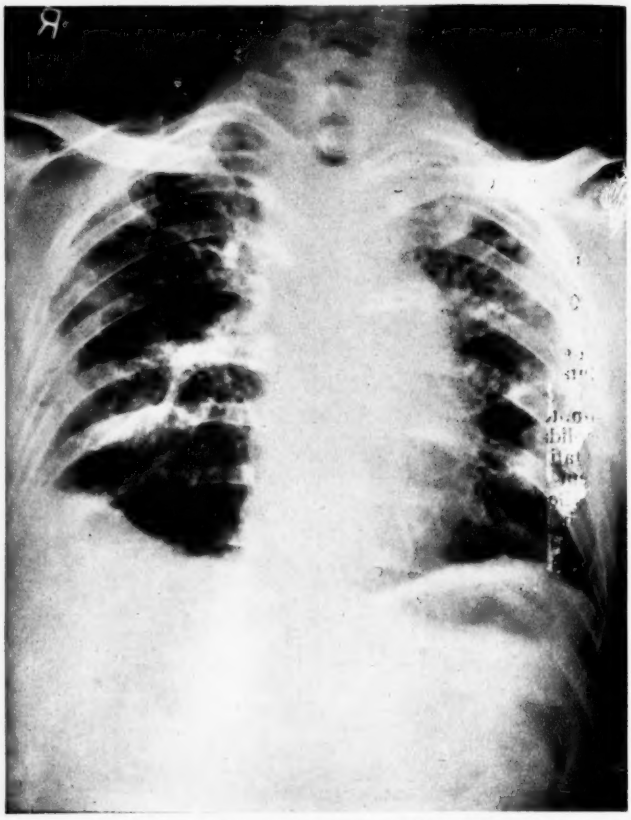

FIG. 6.—Case II (Dec. 5, 1941). Wide upper mediastinal shadow; irregularity of contour of right diaphragm with pleural thickening in costophrenic angle; streaky opacities of fibrotic appearance in both lungs.

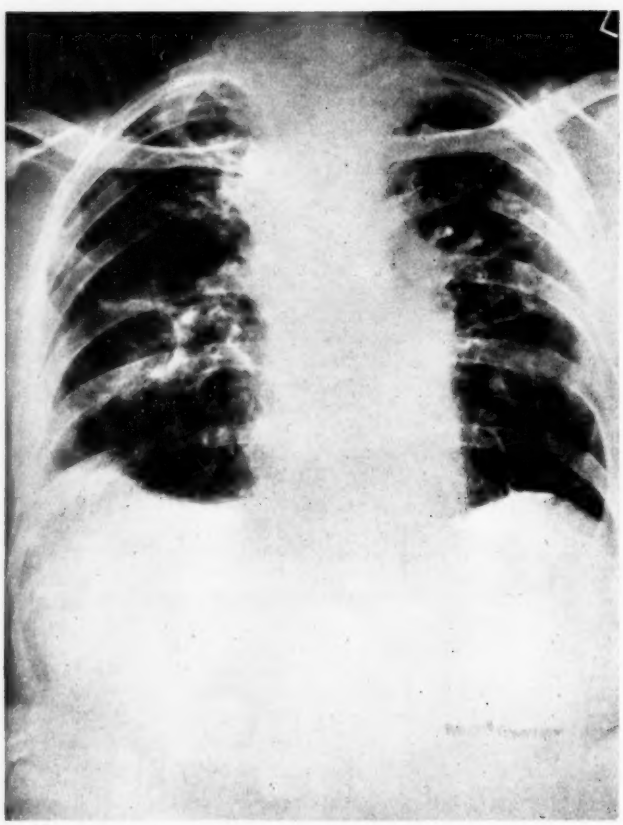

FIG. 7.—Case II (June 24, 1942). No radiological evidence of resolution.

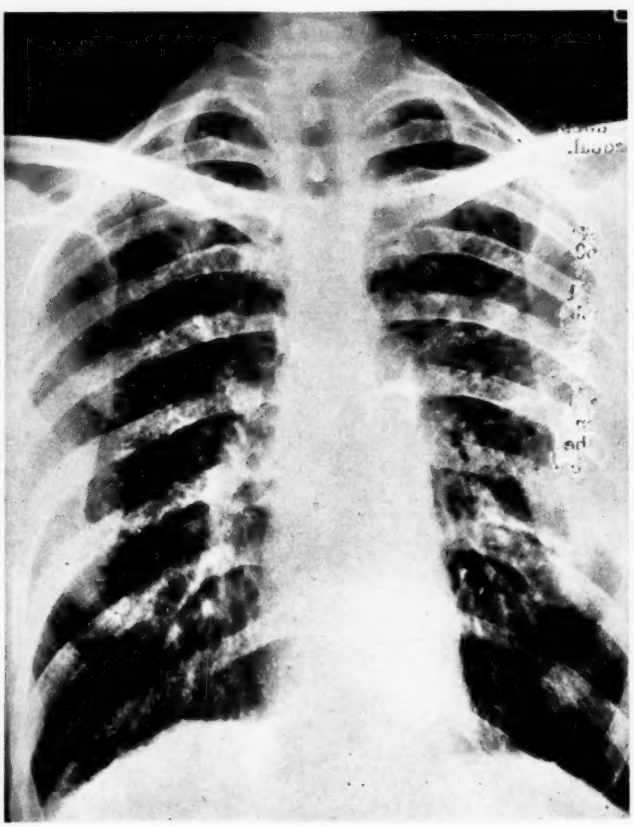

FIG. 8.—Case IV (June 15, 1942). General streaky opacity throughout both lungs.

normal and the blood pressure 110/70. The abdomen, central nervous system, and urine were normal. There were no signs of congestive cardiac failure.

The sputum was mucoid, viscid, scanty, but never blood-stained. The cells in it were polymorphonuclears and lymphocytes. Eosinophils were not seen. The bacterial flora was mixed, containing the usual mouth organisms, with occasionally haemolytic streptococci and pneumococcus Type 23. Tubercle bacilli were not found on repeated search. A special search was made for yeasts, moulds, and fungi, but none were seen. Radiographs taken on Dec. 5 (Fig. 6) showed appearances very much like bilateral pulmonary tuberculosis, and that the lung lesions had advanced since he had been seen as an out-patient. A blood count showed: red cells, 4,590,000 per c.mm.; haemoglobin 94%; colour index, 1.02; leucocytes, 10,200 per c.mm.—polymorphs 51%, lymphocytes 32%, monocytes 6%, eosinophils 11%.

Progress.—The patient was afebrile throughout his stay in hospital except for very occasional temperatures of 99° to 99.6°. The pulse rate was 80 to 100 and respirations 20 to 24 a minute. The dyspnoea gradually decreased and the signs of consolidation in the left upper lobe disappeared, but rales and crepitations persisted throughout the left lung, and were usually present at the right apex or base. On discharge on Feb. 15, 1942, he was able to get about with less dyspnoea than formerly, and has attended as an out-patient since with decreasing dyspnoea but with increasing kyphosis and occasional dragging pain in the lower part of his chest on the left side. He continues to attend as an out-patient and is unable to work. Radiographs taken on Feb. 2, March 16, and June 24, 1942 (Fig. 7) are all identical. They show some resolution of left upper zone shadows between Dec. 5, 1941, and Feb. 6, 1942; but thereafter the widening of the mediastinal shadow in the upper part, the peculiar streaky opacities in both lung fields, and the peripheral basal pleural thickening have remained unchanged.

Case III

A labourer aged 40 attended as an out-patient, complaining of shortness of breath. He was working at the same machine as Case I, and after one month at the job began to be short of breath, had a cough with scanty sputum and chest pains. He was off work intermittently, and was finally transferred to an open-air part of the factory, since when he has had less cough but his shortness of breath has continued. He had had no previous chest trouble. There was no history of tuberculosis in his family.

On examination he was slightly dyspnoeic. There was no clubbing of the fingers. The chest movements were poor but equal, with impairment of the percussion note at the left base and in the left axilla. The breath sounds were diminished in these areas. There were no added sounds. The heart, abdomen, and central nervous system were normal. The blood pressure was 140/90. The blood count was: red cells, 4,500,000 per c.mm.; haemoglobin, 100%; colour index, 1.1; leucocytes, 3,000 per c.mm.—neutrophils 43%, eosinophils 3%, basophils 1%, lymphocytes 49%, monocytes 4%. A radiograph of his chest demonstrated no lung lesion.

Case IV

A labourer aged 44 attended as an out-patient, complaining of shortness of breath. Sixteen months ago he had begun work at the factory and was exposed to bagasse dust when feeding the bale-breaker. A year ago he began to be short of breath and to have a cough without any sputum. He was able to work for increasingly shorter times before difficulties with his breath compelled him to stop. Finally he could manage to work only one to three days in each week. He was then transferred to outdoor work, since when he had been getting better but was still very short of breath on exertion.

He had had pneumonia in 1914, from which he had made a good recovery, but had had no other illnesses. There was no family history of tuberculosis. On examination there was moderate cyanosis with dyspnoea at rest. There was no clubbing of the fingers. The percussion note was impaired at the right apex, with diminution of the breath sounds in this area and at the right base. The breath sounds were normal in character. A few rhonchi were present throughout both lungs. The heart, abdomen, and central nervous system were normal. The blood pressure was 110/70. The blood count was: red cells, 5,010,000 per c.mm.; haemoglobin, 108%; colour index, 1.08; leucocytes, 6,600 per c.mm.—neutrophils 55%, eosinophils 1%, lymphocytes 40%, monocytes 4%. A radiograph taken on June 15, 1942, showed a general streaky opacity throughout both lungs (Fig. 8).

Discussion

The clinical appearance of these patients suggests an acute inflammatory lung disease with urgent and extreme dyspnoea as the presenting symptom but with little or no febrile reaction. On admission Case I was thought to be suffering from bilateral bronchopneumonia, which appeared to be of the influenzal type, but there was no epidemic of influenza at the time and he had already been ill for six weeks before admission—two facts which were against this diagnosis. There had been no case of psittacosis in this country for several years, and he had had no contact with birds of the parrot species. The alternative seemed to be that the lesion was tuberculous or was a form of chronic pneumonia (Scadding, 1936). The radiological appearances were more those of an influenzal bronchopneumonia than of a tuberculous lesion: tubercle bacilli were never recovered from the sputum, and he had long periods when he was afebrile with persistence of his symptoms and signs, so that some form of chronic pneumonia seemed the most likely diagnosis; but here again the absence of pyrexia was difficult to explain. His history of being employed in a dusty occupation naturally led to further inquiry concerning this. He said that some of his workmates had complained of cough and shortness of breath; but the medical officer of the works stated that although several of the employees had had respiratory illnesses about that time he had no reason then to connect them with the work upon which the men were engaged. The eventual complete resolution of the lesions with the return of the patient to normal health seemed to indicate their inflammatory nature, the aetiology of which remained obscure. There the matter rested until Case II was admitted to hospital. He also had the presenting symptom of extreme dyspnoea, and on his physical signs and the radiological appearances was thought at first to be suffering from bilateral active tuberculosis, but tubercle bacilli were persistently absent from his sputum, and he also had long periods when he was afebrile in spite of the apparent activity of the disease. The presence of persistent extreme dyspnoea called to mind the appearance of Case I, and upon inquiry it was found that his occupation, which was given as that of an engineer, concealed the fact that he had not only been working in the same factory as Case I but also had been exposed to the same dust. Contact was then made with the Factory Department of the Ministry of Labour and National Service to ascertain if workers at this factory were subject to an industrial dust disease. Dr. E. M. Middleton, one of the medical inspectors, kindly came to see Case II in consultation; he said that the illness was similar to others which had occurred in workers at the factory, and was probably bagasscosis (or, as we prefer to call it, "bagassosis"), a disease first recorded by Jamison and Hopkins (1941). These writers described an acute illness occurring in a young negro labourer who had been employed unloading bagasse at a board-making factory in America. His work was very dusty, and his illness was characterized by marked dyspnoea, cough with scanty sputum which was sometimes blood-stained, and physical signs and radiological appearances suggestive of bilateral bronchopneumonia. He made a complete recovery, and the lung lesions, after passing through a stage of "miliary mottling" radiologically, resolved, the clinical and *x*-ray appearances described being parallel to those of Case I.

Jamison and Hopkins were able to grow a fungus on two occasions from a concentrate of a 24-hour specimen of sputum in their case, and advanced the view that it was a fungous disease of the lungs. They reported their case at a medical meeting, at which Fasting (1941) stated that he had seen three or four similar cases, which he thought were due to a form of silicosis—a view which is shared by J. Freeman in this country (personal communication).

In the present series Case I had an acute illness with complete resolution of the lung lesions clinically and radiologically. Case II had an acute illness which was called pneumonia, which resolved clinically, and which, although not studied radiologically, must have left few if any traces in the lungs for him to be passed as normal at a tuberculosis clinic soon afterwards. He returned to fresh exposure to the dust, becoming ill again with lung lesions, which advanced between the time of his first being seen and his admission to hospital (Figs. 5 and 6) and which to date show no sign of resolution (Fig. 7), although he has improved symptomatically. Case III, seen once only

as an out-patient, would appear to be in the stage of resolution; and Case IV, also seen as an out-patient, may be going to resolve or might progress to the fibrotic type of lesion seen in Case II.

It would appear that exposure to bagasse dust is capable of initiating a pathological process in the lungs, the complete resolution of which is possible with a return to normal (Jamison and Hopkins, 1941) as in Cases I and III, or which may progress to a lesion the nature of which is probably fibrotic—Cases II and IV. In this connexion it is noteworthy that Cases I and III had least and Cases II and IV most exposure to the dust in point of time.

Although bagasse contains silica in an amount capable of producing silicosis, the acute pneumonic phase of the illness which these workers experience is unlike any known form of silicosis previously described. Further, the men who at the final stage of the process are also exposed to a silica-containing dust are never ill. A pathogenic organism has not been isolated from the sputum in the acute stage of the disease, and an examination of 15 consecutive 24-hour specimens of sputum from Case II failed to isolate any yeast or fungus. It seemed possible that an allergic factor might be responsible for the disease, the workers becoming sensitized to a protein present in the dust of bagasse. Extracts for skin tests were therefore made as follows:

Twenty grammes of coarsely crushed bagasse was placed in 200 ml. of menstruum with 0.25% tricresol added, and allowed to stand five days with occasional shaking. Four extracts were made in: (1) N/10 NaOH; (2) N/10 HCl; (3) normal saline; (4) 30% alcohol in distilled water. After five days all were passed through a Seitz filter. Extracts 1 and 2 were neutralized with equal quantities of N/10 H_2SO_4 and N/10 NaOH respectively. In both a flocculent precipitate formed. This was used as a suspension. The others (3 and 4) were used as clear yellow fluids as they came through the filter. For each antigen a control was made of menstruum with 0.25% tricresol. The antigens so prepared were tested on Case II by the scratch technique, when all gave negative results. They were then retested by intradermal injection of 0.2 ml. Extracts 1, 2, and 4 all gave a wheal maximal in half an hour and thereafter subsiding, and a flare maximal in 36 hours measuring 35, 30, and 40 mm. respectively. The normal saline extract No. 3 gave no wheal, but a flare developed which reached a maximum of 40 mm. in 36 hours. It was also painless, whereas Nos. 1 and 4 were painful. Four laboratory workers, all of whom had handled bagasse and crushed it with the liberation of a quantity of fine light dust, were then tested with the saline extract by intradermal injection, and all gave negative results. Nine volunteers from the nursing staff who had never been in contact with bagasse were also tested, with negative results. Six employees at the factory were also tested. Four of these gave negative results; they had worked at various places in the factory but not at the bale-breaking machine, and two were as strongly positive as Case II, and were Cases III and IV. Of 20 individuals tested, therefore, the only three who gave positive reactions were Cases II, III, and IV. A similar saline extract was then made of light dust which had settled on ledges in that part of the factory where the board is sawn. This, as stated above, contains no protein, which is removed in process of manufacture. Tests with this extract made on Cases II, III, and IV all gave negative results.

It seems certain, therefore, that whole bagasse contains an antigen soluble in normal saline to which workers who inhale the dust can become sensitized. The acute phase of bagassosis is possibly an allergic response in the lungs to this antigen with, but more probably without, an infective element. The nature of the chronic pathological process is obscure. It might be due to: (1) a form of silicosis which supervenes upon the allergic phase during or after the latter's resolution; (2) a response on the part of the lungs to crystalline cellulose; (3) a chronic process of fibrotic nature occurring in tissues oedematous from their allergic response to the antigen. The conception of chronic allergy is foreign to pathological thought at the present time, but fibrosis is known to occur in lymphatic tissue oedematous for some time from any cause, and this explanation of the lung changes in these cases might be subsequently found to have a parallel in some of the more common diseases of chronic nature whose aetiology is at present obscure, such as rheumatoid arthritis.

Opportunities for the study of the morbid anatomy of the condition have not yet occurred, and attempts to reproduce the disease in experimental animals have so far failed.

Summary

An industrial lung disease is described and a theory of its causation which may link it with more common chronic diseases is advanced. It is suggested that the disease should be called bagassosis and not bagasscosis, as it has formerly been named.

Our thanks are due to Dr. J. N. Deacon, superintendent of the hospital, for permission to publish this paper, to the members of the pathological and nursing staffs who acted as normal controls, and to the management of the factory for details of their manufacturing process and facilities freely granted for visiting the factory and performing tests upon some of their employees.

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INTRAMURAL INTESTINAL HAEMORRHAGE

BY

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The following is an account of an unusual case occurring in a woman who was operated on because of signs of an acute abdomen. The peritoneal cavity was found to be full of blood, the source of the haemorrhage being traced to a haematoma of the wall of the caecum which had ruptured.

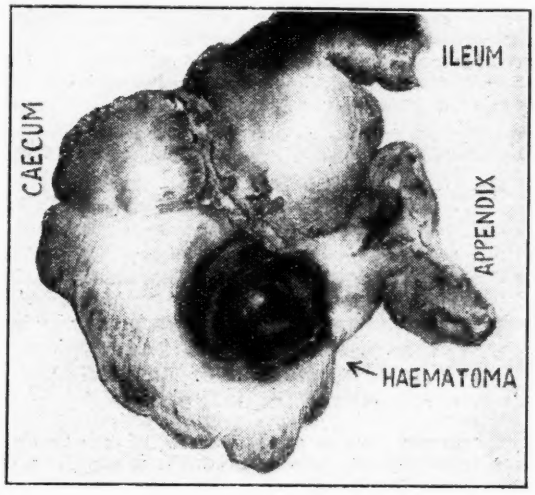
Case Report

The patient, a married woman aged 51, was admitted to Newton Abbot Hospital on Feb. 1, 1941. There had been no former illness of note. On Jan. 30 she had had sudden acute pain over the lower abdomen, had vomited, and had had a little diarrhoea. The temperature and pulse were slightly raised, and there was some abdominal tenderness but no rigidity. On Jan. 31 the condition was unaltered except that no further vomiting had occurred and the diarrhoea had stopped. On Feb. 1 the pain increased, settling in the right iliac fossa, and the right lower abdominal quadrant showed both tenderness and rigidity. The temperature was 99° F. and the pulse rate 90. In the afternoon the temperature rose to 100° F. and the pulse rate to 120. Acute appendicitis was diagnosed (pelvic variety), and it was decided to do a laparotomy, a right paramedian incision being made on account of the patient's sex and the unusual features of the case.

Findings at Operation.—The peritoneal cavity was full of blood, as in a case of ruptured tubal pregnancy. On exploration, however, this cause was excluded, but in the right iliac fossa a lump was found which seemed to be attached to the caecum. As the latter was mobile it was possible to deliver it, along with the tumour, through the abdominal wound. It was then seen that the appendix was thickened and inflamed and that there was a considerable deposit of fat in and around the meso-appendix. A groove separated its base from the tumour, which was a plum-coloured swelling, measuring 2 by 1½ in., situated on the lateral wall of the caecum (see illustration). Its appearance was that of a subserous haematoma, and the site of escape of the blood into the peritoneal cavity was indicated by a ragged tear in the serous coat, 1½ by 1 in. in size. On section the interior of the mass was found to consist of blood clot, and careful examination revealed no perforation into the lumen of the bowel. Around the tumour and beyond its confines the caecal wall was normal.

Operative Treatment.—There was enough space between the ileo-caecal valve and the base of the appendix to allow of resection of that part of the caecal wall which contained the haematoma and the base of the appendix. This was done, and the caecal wall was repaired with layers of sutures, the abdomen being closed without drainage. Except for a slight rise of temperature for 3 days, convalescence was uneventful and the patient made a good recovery, leaving hospital on Feb. 19.

Morbid Anatomy and Histology.—As already mentioned, the naked-eye appearances of the tumour were those of a subserous haematoma. On opening the caecum several small worms were noted lying free in the lumen; these were afterwards identified as whip-worms (*Trichocephalus dispar*). Pieces of tissue were taken for microscopical examination from the centre of the tumour mass, and, after embedding and section, stained with haematoxylin and eosin. The sections of the appendix and intestine showed acute and chronic inflammation, oedema, and haemorrhage. The bleeding seemed to have infiltrated both muscular layers of the intestines and was also seen in the subperitoneal part of the appendix. The exact site of origin of the haemorrhage cannot be determined, and there was no evidence of tumour formation or of any specific granuloma in the sections examined (J. T. Quinlan).



Commentary

The condition described appears to be unusual, as a search of the literature failed to reveal an account of any similar case. The predominant feature was the large circumscribed haemorrhage in the wall of the caecum. Except for the inflamed appendix there were no other signs of infection, and no evidence of spread of infection along the base of the appendix to the caecum. Following upon the operation, investigations were made of the blood count, the bleeding, and the clotting time, but neither these nor other clinical manifestations gave any evidence of an underlying haemorrhagic diathesis. Moreover, the whip-worms, which were lying free in the lumen of the caecum, were clearly playing no part in the aetiology. These are common enough inhabitants of that organ. Three possibilities offer themselves as likely explanations, and these may be considered in turn.

Trauma.—There was no history of a blow on the abdomen or similar violent injury as one would have expected had the haematoma been caused by direct violence. Further, owing to the mobility of the caecum a lesser degree of injury, unnoticed by the patient, could scarcely have caused the haemorrhage.

Torsion of Caecum with Venous Congestion.—Embolism or thrombosis of the ileo-caecal artery could not be demonstrated at operation, and the naked-eye appearances did not resemble those of the case reported by Harris. If infarction was the cause it must have been in the terminal branch of the posterior division of the ileo-caecal artery. It is possible, however, that the acute inflammation of the appendix may have been associated pre-operatively with an incomplete torsion of the caecum, leading to venous congestion, capillary rupture, and haematoma formation, the condition of torsion then reducing itself before the abdomen was opened.

Infection.—The absence of any signs of an infective lesion involving either the caecum or the ileum has already been mentioned. I am aware, however, that haemorrhage into the bowel wall may occur in terminal ileitis, or "Crohn's disease," and it is possible that the findings in the above case might have some bearing on the causal factors involved in that condition. Jackman has cited instances of intramural haemorrhage in the disease. In these the terminal ileum was involved, and the haemorrhages were invariably small, scattered diffusely in the submucous and interstitial layers of the bowel wall, and distributed over a considerable length of gut, their cause and spread apparently taking the lines of least resistance. Regional and terminal ileitis may also involve the caecum, and some authorities advocate removal of the latter along with the terminal ileum. The preponderance of opinion favours conservative measures. The caecum may become so thickened and fibrosed, however, that mechanical obstruction results, making excision necessary. Had the serous coat of the bowel not ruptured and no operation been performed in the above case the haemorrhage might gradually have been absorbed and been replaced by fibrous tissue, the resulting appearance being similar to that of long-standing ileitis. Although in regional ileitis the appearance suggests a chronic infection and the distribution and size of the haemorrhages differ from those seen in the present case, no causal organisms have been found, and it is possible that the infective element may be secondary, the primary lesion arising in some such way as in this case, through mechanical causes such as incomplete torsion of the bowel and haematoma formation.

Summary

An unusual case of haematoma of the caecum, arising without trauma and probably due to incomplete torsion of the bowel, with venous congestion, is described. The possibility of such an accident giving rise to the changes seen in terminal ileitis is discussed.

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CHRONIC LEG ULCER IN MYELOGENOUS RETICULOSIS

REPORT OF A CASE

BY

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The coincidence of chronic ulceration of the leg and splenomegaly was discussed by Witts (*Journal*, 1942, **2**, 309) when he described two instances of chronic leg ulcer associated with purpura haemorrhagica. From his report it appears that chronic leg ulcer has not been described in association with myelogenous reticulosis. Furthermore, Witts said that "mere size of the spleen is not significant, inasmuch as ulceration is absent in the gross splenomegaly of leukaemia, and present with much less enlargement." An instance of chronic leg ulcer and considerable splenomegaly in a patient suffering from myelogenous reticulosis is therefore here put on record.

Case History

The patient was a woman aged 72 who had been "off colour" for three months, and had had a purpuric eruption beneath the skin of the legs and upper part of the chest. She also complained of painful swellings of the joints of the hands, loss of weight, poor appetite, and severe constipation. When examined in Oct., 1940, petechial haemorrhages were numerous beneath the skin of the arms, hips, left shoulder, and back; some of the haemorrhages were ecchymoses. Splenomegaly was detected, the lower pole of the spleen being about two fingerbreadths below the left costal margin; there was slight enlargement of the liver.

A series of seven blood examinations made during Oct. and Nov., 1940, showed that the haemoglobin percentage lay between 60 and 70; the red cells averaged three millions per

c.mm.; the colour index was 0.87; and the mean diameter of the red cells was 7 μ. The leucocytes at no time exceeded 8,400 per c.mm., and on one occasion were as few as 3,000, 48% of the cells being neutrophil polymorphs and 52% lymphocytes; no abnormal white cells were seen. The Rehfuss test meal demonstrated free acid in the gastric juice, with a maximum level of 40 units.

The patient left the hospital on Nov. 18, 1940, and was not seen again until Dec. 16, 1941, when she was readmitted on account of ulceration, thought malignant, on the inner side of the leg. It was of uncertain duration, but was probably several weeks old. She was now pale and anaemic. The lower pole of the spleen was felt about 5 in. below the left costal margin, and its anterior border was almost in the abdominal midline. There was a purpuric eruption on the limbs and the anterior wall of the chest. An oval ulcer, 2¾ by 2¼ in., was present on the inner aspect of the middle third of the left leg. It had a circumvallate appearance, particularly in the lower half of the ulcer (see Fig.). The margin was regular around

the greater part of the ulcer's periphery; it was approximately 1/10 in. broad, raised by 1/10 in., and covered by thinned epidermis; there was no appreciable induration of the margin. The ulcerated area was occupied by dark-red vascular tissue, which bled readily when handled. This tissue was somewhat nodular but not indurated; it was covered in most areas by a thin layer of opaque greyish slough. The initial impression of malignancy was countered, on consideration, by the peculiar margin, its regularity, and the general lack of induration. Moreover, radiological examination excluded bone involvement. Biopsy was undertaken, and is responsible for the dark irregular areas at the left centre and left upper portion of the ulcer margin, shown in the photograph. Squamous carcinoma was at once excluded. The outstanding change was a massive infiltration of the ulcer and the adjacent corium by mature and immature white cells of the granular series. The appearances were those of a myelogenous deposit. Blood examination confirmed the presence of myelogenous reticulosis and severe secondary anaemia. The patient now had 43,000 white cells per c.mm., of which 64% were polymorphs, 16% myelocytes, 11% myeloblasts, 5% smear cells, and 4% lymphocytes. Normoblasts were present in the ratio of 24 per 300 nucleated blood cells. No platelet count was made.

The patient was gravely ill when admitted, and died a fortnight later. Treatment was without influence on her general condition; the ulcer remained almost stationary during this final period of observation.

Post-mortem Examination.—In addition to the ulcer of the leg described above, the other pathological changes at necropsy on Dec. 31, 1942, were as follows: Spleen 1,350 g., 9 in. from pole to pole, maximum thickness 3 in.; the pulp was somewhat soft and greyish red in colour, and the Malpighian bodies were obscure. The kidneys were both pale, except that the middle third of the right was destroyed by a congested infarct. Small friable calculi, the largest 1/4 in. in diameter, were present in both kidneys, the largest lying over the pelvic orifice of the right ureter. There was a solitary cholesterol stone, and the gall-bladder showed slight diffuse cholesterosis. No abnormality of note was found elsewhere; the brain and bone marrow were not examined. Histological examination of the tissues demonstrated the usual appearances of myelogenous reticulosis in the spleen, the liver—where the changes were slight—in the skin, and the kidney, where they were accompanied by acute infarction.

Comment

At the time of her readmission to hospital the ulcer was established and she was unable to give a satisfactory account of its earlier phases; its genesis is therefore a matter of speculation. It may have originated in a subcutaneous haemorrhage. There was no evidence of old haemorrhage in the biopsy specimen, and, although slight recent haemorrhage, possibly caused by biopsy, was present in the corium, the abundance of white cells, and their arrangement, are not ascribable to haemorrhage alone. The interpretation preferred is that the ulcer was a result of devitalization of the skin by a subcutaneous myelogenous deposit.

I thank Dr. John Dick, medical superintendent of St. James's Hospital, Leeds, for permission to quote from the clinical records.

Medical Memoranda

A Filtration Method of Sterilizing Sulphanilamide Powder

After experiments with several methods of sterilization the following technique has been evolved. It is simple in operation and quickly carried out.

Method

Sterilize by dry heat at 140° C. for one hour an 8-oz. insufflator, the tubes of which have their outer ends plugged with cotton-wool. The jar must contain about a dozen heavy glass beads or marbles. A Seitz positive-pressure filter of 100 c.cm. capacity and fitted with an E.K. disk is sterilized in the autoclave at 15 lb. for 30 minutes.

The filter is washed out with about 20 c.cm. of acetone by pumping it through the disk. This is to remove any water of condensation. Dissolve 20 g. of sulphanilamide in 100 c.cm. of acetone and pour the solution into the filter. Pump this through direct into the sterile insufflator, the cap of which is then immediately replaced and securely clamped down. To the longer tube of the insufflator is connected a short length of rubber tubing, which is closed off with a Hoffman's screw clamp, without removing the wool plug. The outlet tube is then connected to a water-vacuum pump and the acetone evaporated under negative pressure. A slow current of carbon dioxide is passed over the solution during evaporation (which may be accelerated by standing in a water bath at 80° C.). When the contents have assumed the consistency of a thick paste the jar is agitated frequently in order that the beads may prevent the formation of large clumps of crystals. On drying, disconnect the pump. By further agitating the jar by a circular motion for 10 minutes or so the crystals will be broken down to a fine powder. To remove the last traces of acetone reconnect to the pump and alternately evacuate and release the vacuum by opening the clamp at intervals of 10 minutes for about an hour, shaking the jar occasionally. The powder will now be in a finely divided state, dry, and free-running, ready for use.

Samples of the powder obtained were subjected to sterility tests as follows: 0.5 g. of powder was introduced into each of three tubes of nutrient broth and three tubes of Robertson's cooked meat medium. The tubes remained sterile after 7 days' incubation. Further samples were sent for chemical analysis, which proved that the final powder showed no evidence of toxic oxidation products. We claim that this method is simpler than any other as yet described. It can be economically and practically carried out either on a commercial scale or in small cottage hospitals.

We wish to express our indebtedness to Mr. R. G. Minor, Ph.C., F.I.C., City Analyst's Laboratory, Cardiff, for his willing assistance.

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Reviews

TEXTBOOKS OF HAEMATOLOGY

Clinical Hematology. By Maxwell M. Wintrobe, M.D. (Pp. 792; illustrated. 45s.) London: Henry Kimpton. 1942.

Disorders of the Blood: Diagnosis, Pathology, Treatment and Technique. By Lionel E. H. Whitby, M.D., F.R.C.P., and C. J. C. Britton, M.D. Fourth edition. Churchill's Empire Series. (Pp. 595; illustrated. 28s.) London: J. and A. Churchill. 1942.

Blood Disorders in Children. By I. Newton Kugelmass, M.D. (Pp. 897; illustrated. 60s.) London, New York, Toronto: Oxford University Press. 1942.

The advances made in haematology in the interval between the two wars have stimulated the production of a number of new textbooks. Wintrobe's *Clinical Hematology* is the latest and most complete of these and the one most likely to succeed to the position left vacant by the death of Naegeli. It has the same wealth of physiological and technical detail, the same breadth of treatment, and an even better bibliography. In fact some 2,400 references are made in the text, so that it is easy to find chapter and verse for almost any statement. At the same time, perhaps as a corollary of this deference to the literature, we miss the personal touches which made Naegeli's *Blutkrankheiten* so attractive. An account of the origin and development of the cells of the blood is followed by descriptions of the erythrocytes and leucocytes, and the platelets and coagulation mechanism. The author then discusses general physical and chemical considerations of the blood as a whole and the principles and technique of blood examination. This is a subject to which he has made notable contributions, and indeed the Wintrobe system of blood examination is standard practice in many laboratories in this country. After a general consideration of anaemia and its treatment Wintrobe proceeds to a clinical account of the various blood disorders. It is not possible to criticize a book of this kind fairly without seeing how it stands up to the test of being used in practice over a period of several months. Nevertheless we should conclude provisionally that it is the most exact and comprehensive handbook of diseases of the blood available in English. It is well illustrated, with seven coloured plates and a large number of clinical photographs and diagrams. All this is not to say that it could not be improved. British readers will feel that the space allotted to blood transfusion and the treatment of haemorrhage is far too small. The signal advances made in this field have been largely the work of haematologists, and it is essential that they should be adequately reported in textbooks of haematology. The clinical grouping of the various blood diseases is capricious. The index is not full enough; it is, indeed, grossly misleading as to the contents of the book. The casual reader or the student in the library can hardly be expected to realize that many subjects are dealt with both in the physiological and in the clinical sections and that there is not a great deal of duplication.

Whitby and Britton's *Disorders of the Blood* has won its way to a fourth edition. The publication of this after three years of war—and in spite of the blockade, the paper restrictions, and the manifold preoccupations of the authors—is in itself a triumph. The book has the same format as Harrison's *Chemical Methods in Clinical Medicine* and deserves an equally honoured place on the laboratory or consulting-room shelf. With 8 excellent coloured plates and nearly 600 pages of text for 28s. it is undoubtedly the best bargain in the department of haematological textbooks. It is not quite so detailed as Wintrobe, but contains as much as the average physician or clinical pathologist needs to know about the blood. The text follows orthodox lines in dealing with the physiology and the disorders of the blood, with an appendix on technique. The arrangement of the clinical sections is to our mind apter and more logical than Wintrobe's. New material in this edition concerns especially the blood pigments, haemorrhagic states, haemolytic anaemias of the newborn, and transfusion. The section on purpuric and haemorrhagic diseases is still the least satisfactory and will probably offer great difficulties to the beginner. It is unfortunate that textbooks do not give figures for the actual frequency of different haemorrhagic states or stress the predominance of the symptomatic ones. It is probably easier for the student also if all the hereditary tendencies to bleed are grouped together. Ligation of the splenic artery hardly deserves mention as a treatment for essential thrombocytopenia. The description of the estimation of prothrombin suggests unfamiliarity with the technique and contains at least one serious error. It is much easier to dry rabbit brain than human brain, and it is in fact very difficult to get a stable dry extract of human brain without using acetone; human brain is best used as a fresh emulsion. Hobson and Witts recommended adding lecithin to snake-venom, not to brain extract, which already contains an excess of the lecithin factor.

Blood Disorders in Children has nearly 1,000 pages and costs £3. Both figures seem excessive and are explained by the fact that it is stuffed with irrelevancies. A reader does not go to a book on disorders of the blood in childhood for details of how to do a white blood count or for diagrams of retention enemata or of fluid feeding by stomach tube. Dr. Kugelmass may like to take photographs of female technicians looking down quite ordinary colorimeters, but we see no reason why he should insert them in a book intended for public purchase. What the blood is like in psittacosis and Oroya fever also has nothing to do with the case. It is not merely that the irrelevancies swell the size and cost of the book; they distort the perspective. Under leukaemia accounts are given of eosinophilic leukaemia, basophilic leukaemia, megakaryocytic leukaemia, erythroleukaemia, and myelomatosis, all of which are excessively rare or do not occur at all in childhood, whereas the account of leukaemia as it actually occurs in childhood is in our opinion poor. The untutored reader might well get the opinion that polycythaemia vera was a common familial disease in children. He will see some quite unnecessary pictures of gloved hands inserting large needles into distended antecubital veins, but will learn nothing of the special tricks and techniques which have been devised for inserting blood via fine needles or catheters into small collapsed veins in infancy. All this is not to say that Dr. Kugelmass's book does not contain many pretty things. The quotations from the poets are apt and the historical notes are pleasant. But selection and compression are essential in scientific publications, and not a style which recalls James Joyce and the family scrapbook. This is a pity, because Dr. Kugelmass is a haematologist of experience. A good monograph on the special haematology of childhood is badly wanted, but Dr. Kugelmass must reduce his book to a quarter the size and price, and tell us more about blood disorders in childhood, before he can hope to fill the gap.

The supply of textbooks of general haematology now exceeds the demand and we must leave them for natural selection and the survival of the fittest. Again and again in reviewing these textbooks we have been struck by the necessity under which authors seem to feel to give long descriptions of the cytology and physiology of the blood. No other branch of medicine seems to demand so much repetition of normal anatomy and physiology. We have spoken before of the need for a cheap international atlas of haematology, and there seems to be equal need for a standard monograph on the physiology of the blood, to prevent all this duplication. Technique is already extremely well described by Regena Beck, whose *Laboratory Manual of Hematologic Technic* is perhaps not as well known as it deserves to be. It is worth pointing out again that the outstanding writings of the new haematology have all been monographs—Janet Vaughan's *Anaemias*, Claude Forkner's *Leukaemia*, and Engelbreth-Holm's *Leukaemia in Animals*. These have not been overloaded with physiology or technique or pictorial art, and we could do with still more precise monographs of the same type.

OBSTETRICS AND GYNAECOLOGY

Recent Advances in Obstetrics and Gynaecology. By Aleck W. Bourne, M.B., B.Ch., F.R.C.S., F.R.C.O.G., and Leslie H. Williams, M.D., M.S., F.R.C.S., F.R.C.O.G. Fifth edition. (Pp. 363; illustrated. 18s.) London: J. and A. Churchill. 1942.

One might be forgiven for wondering if there have been enough recent additions to our knowledge of obstetrics and gynaecology to warrant the publication of a fifth edition at this stage of the war. It is true that the book contains very little that is new since its predecessor was published in 1939, but it is equally true that this 1942 edition is a good one. Much that could no longer be described as recent advances

has been omitted, new material has been added to the remaining sections, and one new chapter has been added. It deals with post-natal care and explains the function of a post-natal clinic, the method of examination, and the suggested requirements in the clinic itself. This chapter gives timely emphasis to a most important aspect of preventive medicine. Dr. Rohan Williams has replaced Dr. Courtney Gage as author of the sections dealing with radiology. As might be expected, considerable space is devoted to the subject of *x*-ray pelvimetry, and a well-balanced summary of the present position emphasizes the fact that it is still the clinical examination which is of paramount importance. It is a little surprising that in reviewing the methods of pelvimetry no mention is made of the work of Nicholson of Moreton-in-Marsh, who has devised a technique which gives results of great accuracy. In the gynaecological section an excellent review is given of the present position in the treatment of carcinoma of the cervix. This edition has been very carefully prepared and will be widely appreciated.

X-RAY TREATMENT OF INFECTIONS

Roentgen Treatment of Infections. By James F. Kelly, M.D., F.A.C.P., with the collaboration of D. Arnold Dowell, M.D. (Pp. 432; illustrated. $6.00 or 33s.) Chicago: The Year Book Publishers, Inc.; London: H. K. Lewis and Co. 1942.

The infections dealt with in this book are gas gangrene (130 pp.), acute peritonitis (60 pp.), post-operative parotitis (14 pp.), and pneumonia (30 pp.), while but 30 pages are devoted to other inflammations. It is thus not a textbook, but rather a piece of special pleading directed at the doctor who may have these particular conditions under his care. In this light the reader will more easily forgive the inaccuracies of the section on *x*-ray physics and the repetition of similar clinical observations and case-management instructions in chapter after chapter. In spite of these defects, and in spite of a style which is neither fluid nor elegant, from these amply recorded clinical data the authors make original contributions to the subject which are of great importance. The reviewer is convinced of the value of *x*-ray therapy in reducing toxaemia, and in saving not only life but also limbs; of the need for starting *x*-ray therapy by means of a portable bedside unit as early as possible in an acute infection, and for giving small doses every 8 or 12 hours during the critical first two or three days of the illness.

The authors are alive to the implications of their work in military surgery, and plead for the use of airborne *x*-ray apparatus in advanced casualty stations. While the book should certainly be read by radiologists, it is particularly to be hoped at this time that the directorates of our medical war services will be impressed with the strength of the case for further investigation at least.

Notes on Books

The therapeutics of eye diseases is one of the finest and most delicate forms of medical treatment. The reactions of the eyes both to diseases and to drugs correspond in their variability with the exceeding delicacy of the tissues of the eye: of their muscles, nerves, and internal optical tissues. The *Handbook of Ocular Therapeutics*, by Dr. Sanford R. Gifford of Chicago, has now reached its third edition (Kimpton, 20s.). It is an excellent book, clearly written, of wide range, and quite up to date. The section dealing with sulphonamides is some indication of this. Dr. Gifford writes very truly on the imperative need for close observation and repetition of all forms of eye treatment both old and new. He says: "A chance series of cases with a fortunate outcome may convert an ophthalmologist . . . into an enthusiastic advocate of a measure which . . . may later prove absolutely worthless. . . . A position of therapeutic nihilism, or of unreasoning scepticism with regard to new agents and methods, is equally fallacious."

A compact little annual which has made itself indispensable to the civil defence organization appears in a revised and enlarged form in the *Fire Protection and A.R.P. Year-Book* (Lomax, Erskine and Co., Ltd., Aldwych House, W.C.2; 7s. 6d., post free). A vast amount of information has been assembled, particularly concerning fire-fighting. Since the first issue of this yearbook the National Fire Service has been welded into a well organized and equipped unit of the defence services, and a feature of this edition is the maps of each region of the country showing the fire force area boundaries. Much information is also given about the resistance of structures to bomb attack, protection against bombs, accommodation and equipment of shelters, and the manner of dealing with gas attacks. The book is not a manual of first aid, but the schedules of equipment for first-aid posts, wardens' posts, and stretcher and rescue parties are included. These are to be found in A.R.P. memoranda and in various circulars of the Ministry of Health, but it is useful to have them embodied in a book which is also a directory of civil defence. This is a volume which we welcome but to which we do not wish many happy returns.

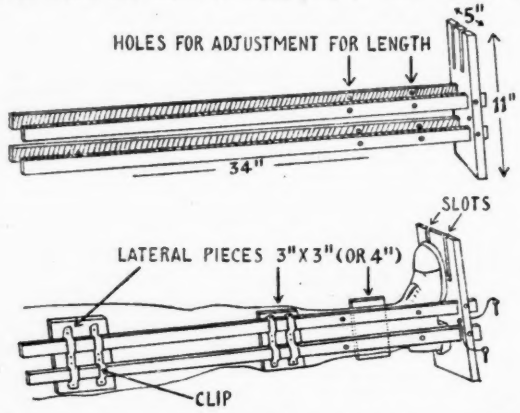
Preparations and Appliances

SPLINT FOR FIRST-AID TREATMENT OF FRACTURES OF THE LEG

Dr. A. P. Phillips, Chaddesley Corbett, nr. Kidderminster, writes:

The first-aid treatment of fractures of the lower leg presents problems which have not yet been solved so well as are those of fracture of the femur by the Thomas splint. Many splints suitable for first aid are available—plain wooden splints, Gooch's splinting, Cline's, Liston's (with or without foot-piece), Bryant's, Robert Jones's, and Nevill's. Every one of these, however, has its own limitation—size, width, length, weight, handiness, size of ring, or cost. Also, it is unusual to receive information as to the size and conformation of the patient, and it is surprising how rarely splints will fit patients efficiently and comfortably.

A splint is submitted here which conforms with the demands of surgical principles, is suitable for a wide range of legs, is easily applied, and can be made from plasterers' laths and pieces of wood measuring 3 in. by 4 in. and 11 in. by 5 in. It consists of a foot-piece and lateral bars, two on each side. Two pieces of wood are fitted on each pair of bars. They can be



moved along the bars and maintain the bars in a parallel position and provide for pressure to be applied to the thigh and calf. The bars pass through slots cut in the foot-piece and can be adjusted for length by pegs which fit into holes drilled in the side of the foot-piece.

Slings are attached to the bars to support the leg at the lower third and at the knee. The foot is fixed to the foot-piece by a figure-of-eight bandage or a strap. Space between the leg and the bars is filled by padding or bags loosely packed with sawdust. Straps or bandages encircle the limb and splint at the calf and thigh. The slings are made by passing a triangular bandage round the left-hand top bar, under the limb, and over the right-hand bar. One end continues round the splint and limb; the other end is passed between the right-hand bars and brought over the splint and limb to tie to the first end.

Good points in the splint are these: The lateral bars give a good view of the leg. The foot-piece raises the limb from the ground so that the under surface is visible and accessible. The heel is protected from pressure. The slots in the foot-piece make it suitable for a large or small foot. It can be assembled in a minute and packs flat; weight 2 lb.

Very good suspension and encirclement can be achieved by the use of lengths of puttee. They can be fixed by rolling a wooden tongue spatula in the end of the sling, applying it alongside the bar, and securing it by metal rings which slide along the bars and slip over the ends of the spatula which project from the puttee sling.

The splint has been made for me by Mr. Foyle of this village, at his works.

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CLASSIFICATION OF DISEASES AND INJURIES

When a history of medical progress during the second quarter of this century is written an outstanding feature will be found to have been an awakening to the need for accurate knowledge about the incidence of disease. So long as disease was thought of mainly in terms of morbid anatomy and bacteriology, statistics of causes of death and of notifiable disease so nearly satisfied the demand for measures of unhealthiness in population groups that, with an occasional grumble that there was a lot they did not tell us, we made do with them. The shifting of interest from the end-products of disease to its beginnings, and from alleviation to prevention, brought in its train a realization that, when all has been said about deaths and notifications, a vast field of ill-health remains of whose trends and comparative incidence we have no measure and can merely form impressions. A few of our large hospitals have given us statistics of the diseases for which patients were admitted, but financial difficulties have blocked the way to any large-scale classification of hospital cases; and we are profoundly ignorant of the incidence of most diseases which are neither notifiable nor productive of considerable fatality, except in limited population groups such as elementary school children. In the early days of National Health Insurance a sample was taken of the records of panel practitioners and tabulated by the Ministry of Health according to a broad classification of ailments; and the Scottish Health Department went further along this line and provided complete tabulations for several years before the war. To our American friends, however, must be given the credit for whole-hearted efforts to penetrate the veil of obscurity, notably by house-to-house recording of illnesses in selected areas and by the preparation of up-to-date standard nomenclatures and classifications of diseases and injuries.

The American work on nomenclature was initiated by the New York Academy of Medicine in 1928, leading to national conferences and the publication in 1933 of the first edition of the *Standard Classified Nomenclature of Disease* with Dr. H. B. Logie as Editor. Apart from a few hospitals such as the Radcliffe, which have made extensive use of "Logie," and one official department which has found in it a mine of information, this notable work has not attracted in this country the attention it deserved. After the appearance of the second edition in 1935 the American Medical Association took over the responsibility for its periodic revision, and following a national conference in 1940 with Prof. Haven Emerson as chairman, we now have an enlarged and revised third edition edited by Dr. E. P. Jordan, which includes also the first serious attempt at a standard nomenclature of operations.[1] The Standard Nomenclature endeavours to include every disease which is clinically recognizable, to avoid repetition and overlapping and to distinguish diseases from their manifestations, thus removing some of the grave faults of most nomenclatures. It is based on a dual system of coding, topographical and aetiological, the first part of the code defining the portion or portions of the body concerned, while the second, separated from the first by a hyphen, defines the cause of the disorder. The first digit denotes the main bodily system, and the next two digits denote the tissues and anatomical sites; diseases of the knee-joint, for example, are prefaced by 248-, 2.. denoting the musculo-skeletal system and 24. joints in general. In the aetiological part of the code the first digit denotes the general category of causation and the remaining digits the subgroups into which each is divided; rachitic affections, for example, are denoted by 764, 7.. denoting diseases due to disorders of metabolism, growth, or nutrition, 76. vitamin deprivation, and 764 vitamin D deprivation. Deformity of the knee-joint due to rickets, therefore, has the code number 248-764.

For card-indexing of hospital cases and for research on specific diseases or manifestations of disease this system is admirable, but for the compilation of morbidity statistics in general it is unsuited and not intended. For the latter purpose we require a classification rather than a nomenclature, so constructed that it can be readily condensed into any groups likely to be needed in tabulations while providing enough detail for all save the most specialized statistical research on morbidity. In America two classifications of this type are under trial—the Classified List of Diagnoses prepared for hospital use by the Welfare Council of New York and the List of Diagnosis Categories for Morbidity Tabulations drawn up by the U.S. Public Health Service and Vital Statistics Division. The latter, built upon the framework of the International List of Causes of Death, is well suited for general public health purposes but is not sufficiently detailed to serve many research needs or for classification of war injuries.

The depth of our ignorance about the kind of injuries sustained by civilians in the present war, from a quantitative standpoint, led the committee responsible for preparing a medical history of the war to seek for a classification to apply to E.M.S. hospital records; and at an earlier date a similar search for a classification emanated from the Medical Advisory Council of the Nuffield Provincial Hospitals Trust at the instigation of Prof. G. E. Gask, who has for many years been interested in improving the utility of hospital records. The outcome was the appointment of a Medical Research Council Committee to draw up a classification to serve all such purposes, and this committee has virtually completed its work and will shortly publish the results. It must suffice to say now that it is based generally on the International List and is comparable with it, thus fulfilling the desires of successive international conferences whose delegates have looked forward to the introduction of morbidity classification. The application of the list to E.M.S. records has already started, and it is hoped that the Nuffield Provincial Hospitals Trust will try out the system in two or three representative regions with the idea of a national application if it proves successful. It would seem that we are, by compulsion of war, coming more rapidly within sight of another milestone in the history of medical statistics and research.

[1] *Standard Nomenclature of Disease and Standard Nomenclature of Operations.* Edited by Edwin P. Jordan, M.D. Chicago: American Medical Association.

VITAMINS AND CAPACITY FOR WORK

It has long been known that certain vitamin deficiencies lead to diminished capacity for mental and physical work. It is not altogether surprising that a popular belief has lately grown, no doubt also fostered by some of those with an axe to grind or a vitamin to sell, that a superabundance of these vitamins may produce extraordinary stamina and increased well-being and vigour. Scientific evidence has so far been scanty and contradictory, but several papers

have appeared lately which throw considerable light on the relation of vitamins to the efficiency of body and mind. Keys and Henschel[1] studied in the course of 10 months physiological and biochemical responses to severe exercise of 26 soldiers receiving the standard U.S. Army Post rations. During part of the study the men were given daily supplements of vitamins; during the remainder, placebos identical in taste and appearance with the vitamin capsules. The exercise consisted in marching in full kit on a motor-driven treadmill for 15 minutes to 3½ hours at a speed of 3.85 miles per hour and an angle of climb of 10% or 12.5%. Elaborate precautions were taken to eliminate effects of training, etc. Several series of experiments were carried out. The daily vitamin additions varied from series to series and consisted of 5 to 17 mg. of vitamin B_1, 100 mg. of nicotinic acid amide, 20 mg. of calcium pantothenate, 10 mg. of riboflavin, 10 mg. of vitamin B_6, and 100 to 200 mg. of ascorbic acid. The army ration itself supplied on the average 1.7 mg. of vitamin B_1, 2.4 mg. of riboflavin, and 70 mg. of ascorbic acid. The pulse rate, heart size, stroke output of the heart, oxygen consumption, respiratory quotient, the urinary excretion of nitrogen and of ketone bodies, and the concentrations in the blood of sugar, haemoglobin, and ketone bodies were measured. No evidence whatever was found of any effects of the vitamin additions on muscular ability, endurance, resistance to fatigue, or recovery from exertion. Keys and Henschel concluded that no useful purpose would be served by enrichment of present U.S. Army garrison rations with the vitamins studied.

Another group of American workers,[2] while accepting the correctness of Keys and Henschel's results, have expressed doubts whether these negative findings may be generalized, first because they dealt with only one type of work, and, secondly, because functions of the central nervous system had not been studied. Simonson and his co-workers[2] therefore set out to gather further evidence. They examined 23 people, all in good health. Twelve of them were given daily tablets, containing 6 mg. of vitamin B_1, 80 mg. of nicotinic acid amide, 8 mg. of riboflavin, 3 mg. of vitamin B_6, and a certain quantity of filtrate factors; eleven received placebo tablets, but believed that these were vitamin preparations. All carried on with their customary diet under usual working and living conditions. The following reactions were studied: Endurance in dynamic work, endurance in static work, recovery of working capacity, maximum muscular force, fatigue of maximum voluntary effort, heart rate, maximum frequency of finger movements, Kraepelin's test for mental work, subjective sensations, and finally the fusion frequency of flicker—that is, the rate of successive light stimuli necessary to produce an effect equal to continuous illumination. According to Simonson and his colleagues[2] there is evidence that this test reflects the general fatigue of the central nervous system. The results showed that the supplements administered did not improve the performance of any of the different types of muscular work, and the results of the Kraepelin test were doubtful. The fusion frequency of flicker was increased, however, in 8 out of 12 persons taking the vitamin tablets, and there was no change in any of the controls. Subjectively, 8 people out of 12 felt more alert after vitamin supplements. In 3 of the 4 who did not the fusion frequency of flicker was also not improved. In the control group subjective improvement was reported by 1 person. Simonson and co-workers feel that as their subjects were perfectly healthy and normal it would be reasonable to expect a favourable effect of an increased intake of the vitamin B complex on the capacity for mental work of the majority of normal people. In their opinion additional vitamin B would benefit the working capacity in the manifold occupations where fatigue is primarily due to fatigue of the central nervous system. It is regrettable that no information was given about the vitamin content of the diets used in this study. Though they are unlikely to have been of the same standard of excellence as the American Army diets, they may well have been at least equal to the wartime ration of the population of this country. It is not known which factor of the vitamin B complex was primarily involved, but work done at the Mayo Clinic underlines the importance of vitamin B_1. Williams and Mason[3] studied there the behaviour of women partaking of diets low in vitamin B_1 (supplying only some 150 i.u. daily), but little different in this respect or in general composition from the diets of thousands of American families with the exception that all other known vitamins were added in liberal amounts. Apart from anaemia which developed in five of the women, all became depressed, irritable, and quarrelsome. They were inattentive to details of their work, confused in thought, uncertain in memory, and lacked manual dexterity. All these symptoms disappeared when, unknown to the women, vitamin B_1 was added to their diet.

With the introduction of flour of 85% extraction the vitamin B_1 intake in this country is probably on an appreciably higher scale than in the Mayo experiments. Yet for heavy manual labour, long hours of work, and the nervous strain of war, even this may not be optimal. The effects of rationing of meat and milk on riboflavin and nicotinic acid in our diet must be carefully watched. It is imperative to make sure that the vitamin content of our rations is adequate to support the sustained mental and physical effort we are all called upon to make, and it is gratifying to learn that the necessary scientific inquiries are already taking shape.

RECTAL GLUCOSE

The administration of fluid by the rectum is a well-established procedure, and there is no doubt that if care is taken to master a few details in technique it provides a valuable means of giving fluid. The method is chiefly used where oral feeding is inadequate or impossible, as in cases of dehydration—"drying" (*pace* A. P. Herbert) is hardly the apt word here—and severe vomiting and after operation, and the temptation to "doctor" the fluid in the hope that the rectal route may provide a means of feeding the patient or administering drugs is almost irresistible. Unfortunately, however, this is not as easy as might have been hoped, and a paper by Garrer, Groen, and Hallen[4] on the absorption of glucose from the rectum comes as a timely reminder that we may not only deceive ourselves as to the benefit derived by the patient from glucose per rectum, but also, in days when every grain of sugar is of value to the country, we may be going to much trouble and expense to no good purpose. The authors describe a series of experiments performed on four healthy adults in which amounts of glucose varying from 5 to 40 g. in 40 c.cm. of distilled water were introduced into the rectum and retained for periods varying from one to two hours. The rectum was then emptied by spontaneous defaecation and subsequent lavage, and the amount of glucose returned was estimated. An initial series of control experiments was made to satisfy the investigators that by this method nearly 100% of the glucose was recovered after immediate defaecation. Small enemas were used, as it was intended that they should

1 *J. Nutrit.*, 1942, **23**, 259.
2 *J. industr. Hyg.*, 1942, **24**, 83.
3 *Proc. Mayo Clin.*, 1941, **16**, 433.
4 *Acta med. scand.*, 1941, **107**, 1.

remain in the rectum and not ascend into the sigmoid. Blood-sugar determinations were made at half-hourly intervals for four hours. The results showed that glucose is absorbed from the rectum only very slowly, at less than one-tenth the rate of absorption from the duodenum, and a very large proportion of the sugar is recovered in the rectal washings. In no case was there any significant rise of the blood sugar. The extremely slow rate of absorption, less than ½ g. per hour, together with the fact that glucose, galactose, and laevulose are absorbed at a uniform rate, suggests that the absorption of glucose takes place by simple diffusion only.

These findings correspond with those of most other investigators in this field. In the small intestine, on the other hand, absorption of glucose is much faster and appears to be an active chemical process, which is specific for the different sugars and requires the function of living cells; an essential step is the phosphorylation of the molecule. There is practically no phosphatase present in the rectal mucosa, but it is abundantly present in the small intestine. The few observers who have noticed a significant rise of blood sugar after giving glucose per rectum have either used large quantities of fluid, in which case the enema certainly reaches the colon and may even regurgitate into the ileum, or have used massive doses of glucose. In practice the former method is unsuitable for ward administration, and, though the latter may be justified in certain selected cases where the intravenous route is contraindicated, it is notoriously difficult to retain the enema, and the method will always entail a large wastage of glucose. Avery Jones and Naunton Morgan[5] found that tap water was the most satisfactory solution to administer by rectum, though to avoid depletion of sodium chloride it was perhaps better to add one volume of normal saline to four volumes of tap water. In any event, we should do well to abandon any idea of rectal feeding, while realizing the enormous value of rectal administration of fluid in the treatment of dehydration.

HAEMORRHAGE FROM GASTRITIS

Gastric haemorrhage may often give rise to great perplexity when, in spite of careful investigation, no obvious cause for the bleeding can be found. Not infrequently cases of severe and repeated haematemeses are seen in which history and radiography can with some certainty exclude at least chronic peptic ulcer. E. B. Benedict,[6] writing on this subject, reports one such case in which nine severe or moderately severe gastric haemorrhages occurred during a course of six years in a patient who had had a gastro-enterostomy performed at the age of 16. In this case no ulcer was found, and subtotal gastrectomy, which was finally carried out, demonstrated chronic gastritis. Such severe bleeding from gastro-jejunitis has been previously noted by others, including Hurst, Faber, and Montier, and most practitioners are able to call to mind "obscure" cases of perhaps severe and sometimes repeated haemorrhage for which no quite satisfactory explanation has at the time been offered. Since the introduction, however, of the flexible gastroscope more precise knowledge as to gastric haemorrhage has been available. Benedict now reports the findings in 213 cases of gastritis, among which there was bleeding in almost exactly 20%. Among his interesting observations are the following. Of 42 patients with gastroscopic evidence of gastritis (all of whom had bled), in only 9 was there radiological indication of any pathological gastro-intestinal change. Among these 42 patients all types of gastric mucosal changes were seen—superficial, atrophic, and hypertrophic—which, as Benedict points out, must often be difficult or impossible to demonstrate radiologically. In a further series of 24 cases in which gastritis and peptic ulcer were thought to be present together, Benedict suggested that bleeding was in fact the result of gastritis rather than of the ulcer, because some of these showed no clear evidence of active ulceration, and all had gastroscopic evidence of gastritis.

Post-mortem evidence of gastric haemorrhage and gastritis is notoriously difficult to assess, but the combination of careful clinical examination with negative *x*-ray findings and a positive gastroscopic report leaves little doubt as to the occurrence of bleeding from simple gastritis. But a "normal" *x*-ray report does not necessarily exclude peptic ulcer, and it is well known how rapidly an ulcer may heal after severe haemorrhage; negative radiographic findings two or three weeks after the bleeding had ceased are therefore inconclusive. Benedict's figures are, however, of importance as indicating the relative frequency with which non-ulcerative gastritis may bleed, and as explaining the cause of some at least of the often unexplained haematemeses which the sceptical may still wish to think of as "gastrostaxis." Superficial erosions, mucosal inflammation, and ulceration may all heal rapidly, and an acute sudden gastric haemorrhage may leave little trace even gastroscopically when examined within only a very short time of the bleeding. Even such common drugs as aspirin may provoke mucosal bleeding, and the increasing evidence of gastroscopy is gradually lowering the incidence of "spontaneous" gastrostaxis to smaller and smaller proportions. It is not yet sufficiently realized that in gastritis the stomach may bleed and bleed severely, that the symptoms may be slight, the physical signs few, and radiological demonstration impossible.

CAUSTIC BURNS OF THE EYE

Caustic burns of the eye present a difficult problem, for the late results are nearly always much more severe than would be expected from the immediate effects of the injury. It is possible that some of these late results are inevitable, owing to delayed appearance of irreversible damage produced at the time of the injury. A more hopeful approach was suggested by the work of Denig, who held that the thickening of the cornea that develops in such cases was brought about by the irritating effect of damaged and necrotic conjunctiva. With this in view immediate mucous membrane grafting of burnt conjunctival surfaces was practised by him, a procedure that has met with only partial success in the hands of other surgeons. The technical difficulties of mucous membrane transplants on a damaged septic surface are not altogether insignificant, and death of the transplant is not uncommon. Although the view that corneal damage is due exclusively to the irritative products of the burnt conjunctiva may not be substantiated, there is much room for technical improvement. A useful study on these lines has come from A. L. Brown.[1] In the experimental rabbit he showed that burns of the conjunctiva, particularly of the palpebral conjunctiva, have a disastrous effect on the cornea. Whenever two burnt surfaces are in apposition—and this holds good of the skin of the rabbit as well as the cornea and conjunctiva—the sequelae are always more severe. Some control of the necrosing process in the cornea could be obtained by the introduction of a layer of tissue separating the burnt conjunctiva from the cornea. Brown used rabbit's peritoneum for the purpose. This procedure, applied clinically, gave good results. It is a fairly simple matter to introduce a strip

5 *St. Bart's Hosp. Rep.*, 1938, **71**, 83.
6 *Amer. J. Roentgen.*, 1942, **47**, 254.

1 *Arch. Ophthal.*, Chicago, 1941, **26**, 754.

of peritoneum into the conjunctival sac and to keep it *in situ*; and judging by the clinical results in four cases the procedure has much to recommend it for the protection of the cornea, though of course it does not influence scarring and contraction of the lids to any extent. Brown's results are supported by two other observers, E. L. Bulson[2] and R. J. Masters, who obtained substantially the same experimental results, though they leave open the question whether rabbit's peritoneum is the best protective membrane. It seems essential that if peritoneum is used it should be as thin as possible and free from adherent tissue. One possibility that suggests itself is the use of amniotic membrane.

MICROGLIA AND NERVES IN POSTERIOR PITUITARY

Although it has been asserted that notwithstanding the existence of microglia in all other parts of the central nervous system it is absent in the posterior lobe of the pituitary body, a clear demonstration of its presence in the pars nervosa has now been achieved by Dr. E. Vasquez-Lopez,[4] working in the laboratories of the Imperial Cancer Research Fund at Mill Hill. Hitherto research workers have failed to demonstrate beyond doubt microglial elements in the neurohypophysis, partly owing to technical difficulties and partly because their attention was directed chiefly to the glandular part of the organ. Vasquez-Lopez has worked principally on the neurohypophysis of the horse, which he has found to be well suited for the purpose owing to the looseness of its texture. He has, however, obtained confirmatory evidence from the pituitaries of the ox and the rabbit, notwithstanding the greater density of the glial tissue in these animals. He has also shown that the microglial tissue of the pars nervosa is continuous through the stalk with the microglial elements of the hypothalamic centres to which the organ is anatomically and functionally related. The form assumed by the microglial elements is characteristic of the initial stages of mobilization of these cells, and transitional stages between the fixed and mobile states are represented in the pars nervosa, tuber cinereum, and supra-optic nuclei. Moreover, between the epithelial cells of the pars intermedia, near its junction with the pars nervosa, there are peculiar cells which the author believes to be migrated microglial cells. This is interesting not only because, in his opinion, these cells may be migratory phagocytic cells, but also, from the genetical standpoint, because cells in this position may be related to the normal outgrowth of tubular diverticula into the surrounding vascular tissue from the apex of the infundibulum in Lepidosiren which constitutes what is known as the "infundibular gland." Further study of the microscopical structure of the neurohypophysis in Lepidosiren and other genera in which this organ is more highly differentiated than in mammals might yield valuable results with respect to its structure, nerve supply, and function in mammals, in which this part of the hypophysis appears to be undergoing regression.

Notwithstanding the demonstration by Cajal more than 50 years ago of the existence of nerve fibres in the posterior lobe of the hypophysis, their presence there has been regarded with much scepticism. The existence of nerve fibres in the posterior lobe has now been conclusively demonstrated by Vasquez-Lopez,[5,6] and he has also confirmed the view that morphologically the pituicytes are only neuroglial cells; the nerves of the hypophysis do not, as has been thought by some, end in relation to the pituicytes, and the way in which they end does not correspond with the usual mode of termination of secretory nerves. It is thus considered that these nerves may be afferent sensory fibres such as those leading from the carotid body and carotid sinus. The terminal nerve fibres end in bulbous swellings, club-shaped structures, and menisci, and in the horse the nerve filaments with their end-organs form a network round the vessels in the fibrous capsule covering the distal pole of the posterior lobe. These terminal bulbs are spoken of by the author as "terminal meningeal corpuscles," and he believes that the impulses arising in them are conveyed by the nerves of the posterior lobe to the tuberal and supra-optic nuclei of the hypothalamus. Whether all these nerves are afferent in nature, or whether some are sensory and others efferent secretory nerves, remains to be determined, and it is possible that research by modern histological methods in those animals, such as Heptanchus and Petromyzon, in which tubular outgrowths from the infundibulum penetrate the pars intermedia may throw more light on this difficult problem.

[2] *Arch. Ophthal.*, Chicago, 1941, **26**, 767.
[3] Ibid., p. 768.
[4] *J. Anat.*, Lond., 1942, **76**, 178.
[5] *Thirty-ninth Annual Report* (1941-1942) *of the Imperial Cancer Research Fund*, p. 8.
[6] *Brain*, 1942, **65**, 1.

A REVIEW OF THE PUBLIC HEALTH

The second wartime summary of the work of the Ministry of Health, for the year to March 31, 1942, has appeared with commendable speed after the first, which, though it covered two years, was not published until last February. The year surveyed in the latest report was less eventful than the preceding two, and was mainly one of consolidation and adjustment of the Department's activities. On the credit side the Ministry can report no major epidemic, no falling off in nutritional standards, no increase in mental diseases, no great variation from the normal in either the incidence of or death rates for scarlet fever, measles, influenza, and enteric fever, and a slight fall in the notifications of cerebrospinal fever (11,077 against 12,741), which, however, still remain abnormally high. Notifications of and deaths from diphtheria increased, however, the former from 46,281 to 50,797 and the latter from 2,480 to 2,641, but it is recognized that no substantial improvement can be looked for until at least three-quarters of the children of the country have been immunized (up to June, 1942, well over 3,000,000 had received prophylactic treatment). There was a sharp rise in the year under review in the number of new cases of syphilis, the increase being 40% over the figure for 1940 (civilian and Service cases together), making an increase of 70.5% in the total of new infections during the war. As regards tuberculosis, since the Ministry's report was prepared we have published (Oct. 10, p. 436) the main findings of the Medical Research Council's Committee on Tuberculosis in Wartime, to which reference should be made. The Ministry states that special precautions have been taken against the introduction into this country of typhus fever, also of malaria by possible carriers from malarial regions abroad. Maternal and infant mortality figures showed a slight increase for the year, the maternal death rate being 2.76 (2.60 in 1940) and the infant death rate 59 per 1,000 live births (56 in 1940), but the rate for infections during childbirth and the puerperium fell to 0.47 per 1,000, the lowest yet recorded. All these are the routine facts and figures issued annually by the Department, but the report this year contains an interesting section on hospital development, including a brief history of the E.M.S., a statement of Government policy for the future, and some account of the special treatment centres for head surgery and nervous diseases, and rehabilitation and vocational training schemes. Finally progress is reported in the compilation of the official Medical History of the War under the editorship of Sir Arthur MacNalty.

War Medicine Series

The paper printed below is based on a lecture which was one of a series recently given at the British Postgraduate Medical School, Hammersmith

MALARIA IN WARTIME*

BY

Sir P. H. MANSON-BAHR, M.D., F.R.C.P.

The Quartan Parasite

The quartan is a parasite of children rather than of adults. It is a very local infection. We found a certain amount in Salonika and in Palestine in the last war, but among the troops it amounted to only 1% of the total. It is truly the most beautiful of all malaria parasites. The corpuscle in which it lives does not enlarge; its cycle of development is seventy-two hours, in contradistinction to the benign tertian, and therefore it typically produces fever every four days. If we can believe Sydenham, quartan malaria must have been rife in Westminster in his day, and most of the Members of Parliament were often precluded from their duties by recurrences of this fever. He realized too that it was associated with marshy districts such as prevailed in Westminster at that time.

Another point about the quartan is its ability to split the red corpuscle in twain. There are only eight spores formed, instead of the eighteen to twenty-four in the case of the benign tertian and eighteen to thirty-two in the case of the subtertian. The pigment is rather blacker. Little spots develop inside the corpuscular protoplasm, but they are not Schüffner's dots. In this country they are known as "James's dots," which are little blue specks, not red like Schüffner's. In this form of malaria we do not always see the classical quartan temperature chart, and this is due to the fact that there may be two generations of parasites in the blood, producing a rough kind of quotidian fever.

Plasmodium ovale

The latest arrival in the malaria family is *Plasmodium ovale*, so called because the corpuscle in which it lives tends to become oval in shape. It was discovered in 1922, and was at first looked upon as a freak; but now we know it is a common parasite in West and Central Africa, and it had been confused with the benign tertian because of its tendency to produce Schüffner's dots. The corpuscle becomes ragged, frayed, and oval in shape, presently losing its rounded contour. The parasite has only eight spores, and produces a harmless infection. It is said to have been observed in Central Asia and in Central America, but the general idea is that it is peculiar to Central Africa. *Plasmodium ovale* is now much used in malaria therapy, and is the "star turn" at present at the malaria centre at Horton, Epsom, because it produces efficient rigors when artificially inoculated and does not require any prolonged or drastic treatment, but just fades away directly small doses of quinine are administered. I have seen only one patient who was really seriously ill with this variety.

Drugs used in Treatment of Malaria

With regard to drugs in the treatment of malaria, before the last war we were told—from the teaching of Prof. Dixon in Cambridge—that the most specific of all drugs was quinine. Yet as this war progressed we began to disbelieve more and more in its specificity, and had to modify our fundamental ideas. We believe now that quinine is an extraordinarily valuable drug but is definitely selective upon certain stages of the malaria parasite. The species of the parasite on which it acts most quickly is the benign tertian, but we cannot entirely banish it from the human body by one or two or even three doses of quinine. The plasmodium has a way of side-tracking and slipping away into the interstices of the bone marrow and the spleen, ready to emerge again at the next opportunity. This selective action of drugs was brought out strikingly when plasmoquine (pamaquin) was discovered in 1925; but it is not, as you may have thought from reading the literature, an attempt by Germans to synthesize quinine, but is a by-product of methylene-blue, which was employed by Manson in China as a febrifuge many years ago. He formulated the idea—a very clever one—that if there was a selective action of a stain for a particular blood parasite it could be surmised that the same substance might also exert a therapeutic effect, and compounded a combination with borax (Manson's stain), which he proved to be selective for malaria parasites.

When the blood is full of subtertian crescents and plasmoquine is given in sufficient doses this stage of the parasite, which is not amenable to quinine, rapidly disintegrates. The parasites burst at various points; the chromatin degenerates, and finally they vanish from the blood stream.

Atebrin (or mepacrine), an acridine compound, is another dye derived from methylene-blue. It does not affect this crescent stage at all and has no effect upon exflagellation, but causes the pigment to collect in the centre of the parasite.

Diagnosis

It is the differential diagnosis of malaria which is so important. Malaria usually causes enlargement of the spleen, but whether you can tell that this is so or not depends on your skill in palpation. In subtertian malaria the spleen becomes rounded off rather like a tennis-ball, but it is only after repeated malarial attacks that the classical hard edge can be detected. It is therefore not safe to say that a man has not got malaria because the spleen cannot be palpated. There are various ways of performing palpation, and new-comers have to learn the correct technique; and the question arises: When is a spleen not a spleen? The answer is: When it is a kidney! An enlarged left kidney is sometimes mistaken for an enlarged spleen. I recall a major in the Indian Army who drew a pension for eighteen years on the ground of enlarged spleen when in fact what he had was a large left polycystic kidney; and I have even seen this misdiagnosis made when assisted by uroselectan and radiography. There is also splenic pain, which may be significant.

In the diagnosis of malaria the great point to remember is that in a malarious country it may simulate almost any other disease. Subtertian malaria is the greatest mimic. Quite commonly it produces cerebral symptoms—cerebral malaria, due to the congregation of parasites in the brain, sometimes leading to coma and death. I remember how some soldiers marching from Jaffa to Jerusalem in 1918 fell out by the side of the road waiting for the ambulance, and before it could reach them they were dead. Very often in the Near East the worst forms of malaria are found in the winter-time. Mosquitoes once infected remain so, and in winter tend to congregate in buildings and nooks where there is warmth and then descend upon anyone they can find. These dire cerebral forms may crop up during the winter months and may be mistaken for other forms of cerebral disease. In the summer the patient may go down with hyperpyrexia, and so the case may be mistaken for heat-stroke.

I would especially warn against confusing alcoholism with malaria. In a malarious country a man may be accused of being drunk when he is suffering from malaria.

Mania is another thing which may be misleading: the patient may be suffering from subtertian malaria delirium; and, on seeing a sudden epileptic fit, do not jump to the conclusion that it is true epilepsy, for it may be malaria simulating that condition. Then there are attacks simulating cerebrospinal meningitis with pain and stiffness at the back of the neck. There is an appendicular form of malaria that is due to sporulating forms of the parasite which select that particular part of the intestinal canal in which to congregate. When the patient's temperature rises with rigor to 104° F. as a sequel to an abdominal operation, you will want to ask whether malaria parasites were not in the blood before the patient was subjected to operation or whether the operation actually incited the rigor. Cholecystitis is also a dangerous primary diagnosis. Why should an epidemic of cholecystitis in healthy young men suddenly arise? The explanation lies in

* Concluded from p. 462.

the hepatic congestion in subtertian malaria, with an acutely distended gall-bladder.

Then there is malarial dysentery, or colitis. Malaria is frequently accompanied by diarrhoea; in fact, often there may be diarrhoea and nothing else to guide one. It is very common to see patients from West Africa who have suffered from diarrhoea on the voyage and, owing to this, doctors have prohibited them from taking quinine. I have seen such cases develop cerebral malaria and fatal coma the moment the boat has docked.

In Egypt subtertian parasites have been demonstrated in scrapings made from the bowel. "Malarial dysentery" with blood and mucus in the stools simulates acute bacillary dysentery. It is possible to get such an acute diarrhoea with malaria that it resembles cholera. There were several cholera scares in the last war, but they were due to a choleraic form of subtertian malaria. Then we may meet the icteric forms; but malarial icterus is not a really true obstructive jaundice. In subtertian malaria it is almost diagnostic to get urobilinuria with sherry-coloured urine, and this may sometimes be taken as an index of infection, even in the absence of subtertian parasites in the blood.

I remember in 1916 being asked to see a soldier who had come down from Khartum intensely jaundiced. He was evidently dying. I was then in charge of the laboratory, and found that I had examined his urine and serum, and carried out agglutination tests; but the one specimen that had not been examined was the blood film, which was crammed with subtertian parasites. By the time this was done, however, it was too late! One can meet with forms resembling acute pancreatitis in which the pancreas is affected; others resemble intestinal obstruction, with profuse vomiting. One may even see cardiac forms with generalized oedema, which were frequently encountered in the last war, or, again, pulmonary forms associated with bronchitis or pleurisy. Further, there may be some resembling acute nephritis with blood and cells in the urine; or a cutaneous rash with multiple haemorrhages in the skin, somewhat resembling typhus or measles.

Blackwater Fever

Finally, there is the most dramatic sequel—blackwater fever, solely associated with subtertian malaria. It probably represents an anaphylactic phenomenon due to hypersensitivity to toxins of this parasite. Blackwater fever occurs only in those parts, such as the Jordan Valley, Macedonia, and West Africa, where the subtertian parasite is prevalent. The prevention of blackwater fever is closely linked up with the prevention of malaria, so that if a man does not get infected with the subtertian parasite he will not develop blackwater. If a laboratory service is maintained by which in all cases the blood is examined for malaria the moment the patients fall ill, then the onset of blackwater fever will be prevented. In the years immediately succeeding the last war I never treated less than 4 or 5 cases of blackwater fever here in London every winter; they were usually acute dramatic cases, and the death rate figured between 25% and 50%; but since the rule has been established that all must have their blood examined directly they land in this country from West Africa, blackwater has not been observed. A patient is exposed to the danger of blackwater fever once he has had acute malaria—usually up to nine months. It is apparently a case of supersaturation with this parasite, so that blackwater seldom results after a primary infection. It occurs mostly in the old residents of the Tropics who, on returning to this country, have been exposed to cold and wet or some shock which causes a sudden multiplication of parasites. Then the red blood corpuscles break down and become haemolysed, and the victim may die from blocking of the kidneys with products of their disintegration. If, therefore, this process can be prevented from taking place, then blackwater fever will not ensue. Treatment depends upon the alkalinization of the blood and upon prompt blood transfusions.

The Importance of Blood Examination

The diagnosis of malaria depends upon correct blood examination. The diagnostician must be familiar with all stages of the malaria parasites: he should be so sure of his premisses that he can recognize them as readily as Smith, Brown, or Robinson. But can ordinary unsophisticated folks learn to distinguish these appearances in a reasonably short time? The answer is that they can be taught to do so. In Central Africa there are native dressers who are proficient in spotting parasites. In the last war when put to the test we had to improvise an organization for the detection of malaria at the earliest possible moment for treatment in the field. There originated the diagnosis stations which have now been included in the Army service. Orderlies were chosen from the ranks, some of them with little previous education, and by six weeks' intensive training, by making them look at and stain blood films, we got them sufficiently accurate in discerning malarial parasites to be of great service. A number of these men are still employed here in London at the present time. Those thirty men who were trained were responsible for diagnosing 417,000 blood slides in the last year of the war in Palestine.

Prevention and Treatment

How are we going to prevent malaria in the field? Quinine in large doses is a poison; it may produce amblyopia in some people, and they may become blind. Quinine in enormous doses, as a means of preventing a malarial attack, is a broken reed. It has been shown that one can inject quinine together with malaria parasites into the blood of the recipient and yet produce malaria. On the West Coast of Africa most officials cling to the belief that 5 grains of quinine will prevent malaria and blackwater. It probably modifies the acuteness of the malarial attacks and thereby the proclivity to blackwater fever, but when you give soldiers who are operating in open country 5 grains of quinine a day it has little visible effect in reducing the incidence of malaria. For prevention on a large scale the chief line of defence is the mosquito net. The next best method is to kill the mosquitoes.

With regard to drug treatment of the actual attack, however, quinine still remains the standard. It is most effective in benign tertian malaria and it has also a great effect upon subtertian. But it is necessary to remember that quinine given in big doses to a patient with a large number of subtertian malaria parasites is likely to precipitate blackwater fever by the sudden dissolution of the parasites, and the patient may die within twenty-four hours. For benign tertian malaria, quinine should be given in doses of 10 grains three times a day, and the bowels should be freely kept open. One must go on giving the quinine in decreasing doses for about six weeks, though even this continuous therapy will not extirpate the infection from the body entirely; but to inject quinine intramuscularly to everybody indiscriminately is to ask for trouble, as abscesses and indurations are apt to form in a certain number. At the same time I never hesitate to give quinine intramuscularly when it is necessary as a remedial measure in severe infections. The results are magical if it is given in the right way and injected deeply into the gluteal muscles, but it should never be injected below the folds of the buttocks.

You cannot treat malaria scientifically unless you control treatment by frequent blood examinations and can recognize the changes in the parasites when acted on by quinine or other drugs. Intravenous quinine is reserved for the most severe forms of subtertian malaria. From 5 to 7 grains dissolved in 5 c.cm. of distilled water is quite enough. With regard to plasmoquine, remember also that this is poisonous. When it was first introduced we gave it in too big doses, and were thereby producing poisonous effects. It is now recognized that small amounts of plasmoquine in tablet form—known as plasmoquine compound—are beneficial, each tablet containing 1/6 grain, with 2 or 3 grains of quinine. This, given as a regular course, has been found by the Army in India to be the best method of treating benign tertian malaria and of preventing further relapses. In such cases a start is made with the quinine and continued with plasmoquine compound, the dose of which is two tablets twice a day for a week, amounting to four courses of seven days, with a break of four days between each. This means that about 2/3 grain of plasmoquine is given a day, in addition to 20 grains of quinine. With this method the relapse rate in benign tertian malaria has fallen from 40% to something like 8% in the Army in India.

Plasmoquine and atebrin go badly together, but atebrin and quinine work well in combination. The dose of atebrin is 1/10 gramme three times daily for seven days. It is a yellow tablet which is given by the mouth; but there is also a soluble form which can be injected. It is active especially in the treatment of subtertian malaria, and I have seen only one case in which blackwater fever supervened after atebrin, so it is useful in this direction. I do not believe, however, that it is nearly as effective in treating benign tertian malaria as the method I have outlined. Certain disadvantages of atebrin have been pointed out, and it is well to warn people that they may acquire a somewhat yellowish tinge. I have never seen anybody go "off his head" when taking atebrin, but acute mania in native races has been described after taking it in therapeutic doses, though this certainly does not seem to be common in Europeans.

RECEPTION OF CASUALTIES IN AN E.M.S. HOSPITAL

BY

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AND

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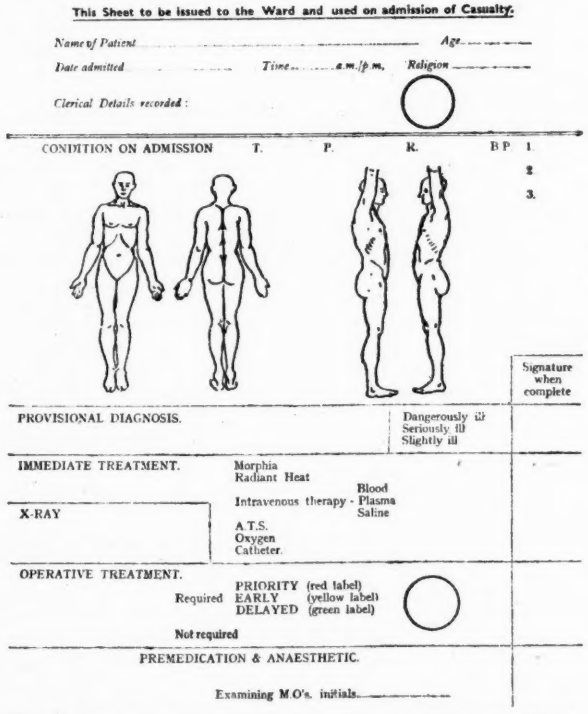
The sudden influx of a number of wartime casualties, whether Service cases or civilian, calls for a procedure different from that used for ordinary peacetime admissions. These casualties are the immediate concern of several separate hospital departments, and it is therefore important that each section should be supplied with the necessary data in the simplest form. With this in view we prepared an urgency admission sheet which has worked very well in actual practice and which, having been thought deserving of praise in high medical quarters, we consider worthy of publication.



This sheet, the front page of which is here reproduced, is hung at the foot of the bed in a temperature-chart holder, and consists of a single piece of paper about the size of the printed page of the *Journal*, printed on both sides. A description of the back of the sheet can be given in a few words. It is divided into two sections, one half being for the operative findings, the other for the post-operative instructions. This side is completed by the anaesthetist during the operation.

The front of the sheet is a record made up of the following sections. It is headed by the name, the Service No. of Service cases, age, date and time of admission, and religion. Immediately below this is a space for the use of the clerical staff, who, having recorded the details which concern them, denote this by affixing their stamp. Next comes a section in which are entered the temperature, pulse, respiration, and blood pressure of the patient, together with a pictorial record of the injuries, which are roughly sketched on a series of anterior, posterior, and right and left lateral diagrams of the body. The section that follows provides a space for the provisional diagnosis, together with three headings denoting the severity of the patient's condition. The immediate treatment occupies a section below this, and consists of a list of modern resuscitative procedures which the surgeon orders by eliminating those not required. Radiographic instructions are provided for, and the succeeding section indicates whether operation is required or not and gives the preferential order for cases to be taken to the theatre. A coloured label is affixed according to whether this preference is (*a*) priority (red), (*b*) early (yellow), or (*c*) delayed (green). This classification has proved to be a great asset in dealing with a ward full of casualties. It is a guide to the radiographer as to the cases to take first and as to the order of their transfer to the theatre. Thus, those with the red label are first to go, being followed by the yellow label cases; the green label cases can usually be left till next morning for operative treatment, the immediate dressings being done in the ward.

Value of a Simple Sheet in Hospital Practice

The advantages of this type of sheet to the various hospital departments can best be shown by a brief statement of how the system works in our own hospital.

Medical.—We have found that a surgical team can, on an average, deal with 25 casualties. The idea of rushing new arrivals to the operating theatre has been generally discarded since the days of Dunkirk, it being realized that methods of resuscitation and procedures to counteract shock are of paramount importance. The surgeon in charge of a group of casualties has therefore adequate time to go the round of his cases, provided the treatment can be clearly indicated with the least possible delay. For this reason copious note-taking at this time must be dispensed with. As will be seen, the subdivisions of the sheet allow fully for this to be done. The surgeon makes his examination and in a few seconds completes the sheet, thereby giving the provisional diagnosis, instruction for radiography, the resuscitation procedures he requires, and the grading of cases for time of operation. He also assesses the degree of severity, which indicates to the clerical staff the procedure which instructions state shall be followed for E.M.S. cases.

The other members of the team follow up and, taking the red label cases first, carry out the ordered treatment which requires their personal attention—for example, intravenous therapy, blood pressure, and haemoglobin estimations. The treatment having been completed the sheet is initialled in the space provided at the side. Thus the surgeon is enabled to look though his own cases and then proceed with the operative work, each patient arriving at the theatre in the correct order and with the preliminary treatment carried out.

Radiography.—It has been found that practically all cases admitted under war conditions require an *x*-ray examination. The radiographer, working with a portable apparatus, takes the cases in order according to the coloured label. He has not to keep asking which to take first; he can proceed unhindered with his work, his instructions having been given in the appropriate column. When the films are completed they are hung at the foot of the bed and go with the patient to the theatre.

Nursing Staff.—Injections ordered are given by the sister, who, with the help of the concise recordings of the sheet, gains a clear and quick conception of what is happening to patients in her ward. Anaesthetic premedication is given, and there is little likelihood of cases being sent to the theatre in the wrong order, thereby delaying treatment of more urgent

cases. The minimum amount of clerical work by the nursing staff is called for, their only contribution being the simple details of name and age at the top of the sheet. All other details required by the clerical department are obtained by their own staff.

Administrative Staff.—The amount of details which can be obtained obviously depends on the condition of the patient, but so far as is possible enough are taken to allow for procedures required from the clerical department to be put into motion. These procedures include the provision of data for hospital records, information to be supplied to the Casualty Bureau and Service Departments, completion of M.P.C. 47—which folder is then returned to the ward—completion of Form E.M.S. 105, correlation of total numbers, and, in fact, all statistical information asked for very early in the proceedings. The clerk dealing with the case takes note of the severity of illness and sends out formal notices to relatives in accordance with E.M.S. instructions. When the administrative details have been obtained a special stamp is put on the chart which indicates that the cases have been dealt with; it is thus easy to see which still remain to be attended to. The patient's religion is clearly shown at the top of the form, and the respective ministers of religion can also see at a glance the severity of the patient's condition.

Conclusion

A big influx of casualties is very likely to lead to confusion if a clear-cut system is not established—everyone has his own work to do, and the necessity for questioning by this or that person should be removed so far as is possible. The use of our simple emergency admission sheet has done much to effect this, and the fact that everyone can get on with his own particular task undisturbed leads to a smooth-working efficiency in the hospital organization which must be of direct benefit to the patient.

WELFARE IN THE WOMEN'S SERVICES

The enrolment of women as auxiliaries to the fighting Services on a scale far exceeding that of the last war has introduced many new and difficult problems. Their corps have expanded so quickly that many of their conditions have had to be improvised. Great ingenuity has been shown on all sides, but some units have suffered discomfort and others confusion. The shortage of labour and materials slowed down the construction of accommodation and the delivery of clothing and equipment. Officers had to carry out duties for which they had not been perfectly trained, and severe weather added to the difficulties of everyone. The growing-pains of the movement were reflected partly in definite and well-founded public complaints of bad conditions, and partly in a crop of vague rumours about drink and immorality. The Government wisely determined to apply the remedy of publicity. On Feb. 24, 1942, the Prime Minister appointed a committee to inquire into and report on the amenities and welfare conditions in the three women's Services. The chairman was Miss Violet Markham, and the members included senior representatives of the fighting Services and M.P.s. The medical members were Sir David Munro and Dr. Edith Summerskill, M.P.

The committee's report[1] gives not only a full and fair account of the Services which should effectively dispose of the charges maliciously levelled against them, but lays a firm foundation of knowledge for the future.

The care taken in all the Services to maintain a high standard of health and hygiene impressed the committee very favourably. The members of the committee were assured by the medical officers at the departments and the stations that the health of the women is extremely good. They were struck by the marked improvement which the first month's training effected in the physique, poise, and self-confidence of the recruits. They suggest pertinently that uniform health records should be kept for the Services and for Government establishments, so that the information may be used after the war for a study of health in relation to women's employment. Women in the Services, as in industry, have double the sickness rate of men. The special ailments of women account for part of the increase, but the greater incidence of sickness is among the immobile. The best menstrual health was found among women doing strenuous physical work. The large amount of dental treatment needed was a revelation to the committee.

[1] Cmd. 6384, 1942. H.M. Stationery Office. (1s.)

Reporting Sick: A Criticism

They received a number of complaints of inattentiveness or lack of skill in the medical and nursing staff, and the treatment of minor ailments caused them some uneasiness. It was alleged, for instance, that girls had to get up and attend sick parade even when they felt ill, that waiting rooms were not always provided, and that patients had to wait long in draughty passages. They were also told that the medical officer sometimes neglected to visit a girl ill in her barrack room or her billet. Many of these complaints proved worthless, but others were supported. How far these, when proved true, belonged to the past of pressure and difficulty the committee could not say. In theory a girl who feels ill reports to the non-commissioned officer in charge of her room; the N.C.O. takes her temperature, and if it is above normal the girl remains in bed until seen by the medical officer. Many auxiliaries, however, stoutly denied that this procedure was always carried out. The committee therefore recommends that commanding officers should constantly review sickness arrangements and ensure that the rules are strictly enforced; it should be the special duty of the company officer to see that her sick receive prompt medical attention, and to be especially vigilant when a girl reports sick in billets or on a remote site. The committee is also concerned at the failure to provide special diet for girls suffering from minor ailments. Sausage-and-mash and roly-poly pudding, it declares, though excellent in themselves, may be unsuitable for a girl suffering from a sick headache. It also considers that patients allowed to stay in their own quarters for a temporary indisposition should not be obliged to get up to obtain their food. Medical inspection parades, other than sick parades, are frequent, and are, unfortunately, all the more necessary because of the prevalence of infestation by scabies and head lice. Head infestation has, however, been reduced to less than 2%, as against 25% in the civilian population of comparable age groups.

Need for More Women M.O.s

The committee found the medical personnel and hospital accommodation adequate. The hospitals are well staffed by specialists, including women dietitians, and include well-equipped special hospitals and centres—e.g., for orthopaedic and nervous disorders. Both the Navy and the Army Medical Services have women on their directorates, and a similar appointment is to be made in the Royal Air Force. The committee thought that more women medical officers should be appointed to the A.T.S. and W.A.A.F., especially in the large reception and training centres; that more use should be made of them in the W.R.N.S. reception stations; and that a woman medical adviser should be appointed to each naval command. State-registered nurses and V.A.D.s are employed in the hospitals and large sick-quarters of all the Services; and the committee admired the combined post, just instituted by the R.A.F., of nursing and health welfare sister to act as health confidante to women. The R.A.F. also employ women trained as nursing orderlies to work in the men's hospitals, and the committee suggests that such of these women as show ability and vocation should be given an opportunity to transfer to the nursing profession.

The committee received complaints about hygiene lectures in the Forces. Some of its members heard and approved of the W.A.A.F. lecture, which was given by a woman doctor, but were not satisfied with the conditions under which it was given. Such an address should not, it considers, be given in a large hall to an audience of recruits of all ages. It suggests that a lecture should be given to all three Services on the wider implications of sex behaviour, not because the sex morals of the Forces are more precarious than those of civilians, but because life in the Forces presents new educational difficulties. It finds, however, common agreement that ephemeral sex relationships create more emotional problems than they appear to solve, and it is of opinion that the combined wit of the medical and educational services should be able to provide a

standard lecture on broad lines which would be generally acceptable. A set lecture, however, will not go very far on the road of sex education, and the committee thinks that if officers were instructed more fully in the various aspects of the subject they would be better equipped to play a vital part in their dealings with individual women.

Pregnancy and Childbirth

Illegitimate pregnancy is almost certainly, it says, less common in the Services than outside. No woman runs an extra risk of becoming pregnant by joining a Service, and if she does become pregnant the arrangements made for her care and disposal are both humane and efficient. She goes to a discharge depot for a short time, and while there she is put in touch with one of the voluntary societies and other bodies which make arrangements for confinement and the future. The facilities have proved adequate, but the situation is now becoming more difficult as the Services expand. Not only single women need help, for the Services contain numbers of married women with no homes. Here, the committee points out, is a national and not a Service problem. It presses the urgency of this on the Ministry of Health and suggests immediate action by grants to local authorities and voluntary associations for further accommodation during pregnancy, and by increasing the provision in hospitals, maternity and convalescent homes, and residential nurseries for children. The figures for venereal disease are half those in men's units. Arrangements for diagnosis and treatment are adequate, but more women medical officers might be employed in the gynaecological wards of the hospitals. The committee makes the point that loose behaviour is not necessarily the product of Service life, which generally puts the relations of men and women on a healthy and normal basis. It finds that promiscuous conduct is limited to a small proportion, and that the allegations of immorality which have disturbed opinion reflect most unfairly on an admirable body of women.

The report should not only go far to reassure the public about the conduct of these Services but should serve the valuable purpose of making their organization and problems better known. For the first time in history a vast number of our young women are receiving a regimental training in discipline and arduous communal living. Their present experiences will profoundly affect their whole future attitude to life, and through them that of their children. To ensure to them now the best possible conditions for bodily and spiritual welfare is a vital duty, and the report may make an important contribution to its performance.

Reports of Societies

SYMPOSIUM ON REHABILITATION

At the annual meeting of the British Orthopaedic Association held in Nottingham from Sept. 25 to 26, under the presidency of Mr. G. R. GIRDLESTONE, the dominant theme was the present arrangements and future plans for rehabilitation of the injured.

At Harlow Wood Orthopaedic Hospital Mr. S. A. S. MALKIN demonstrated the work of the hospital's remedial workshops, and a film was shown illustrating the methods employed there and at a special annexe in the occupational reconditioning of E.M.S. casualty patients. Later, at the Rehabilitation Centre for Miners at Berry Hill, near Mansfield, a discussion was held in which the matter was dealt with from the points of view of the surgeon, the employer, the industrial medical officer, and the trade union.

The Surgeon

Mr. E. A. NICOLL, opening the discussion, said that the problem was threefold: first, the purely scientific aspect of physical restoration; secondly, the psychological one of obtaining the full co-operation of the patient; thirdly—and sometimes more difficult—the sociological problem of obtaining the proper social context for the conduct of rehabilitation. As soon as injured, every working man's first desire was to get well as soon as possible. It was when delay occurred that doubts and fears crept in. These must be removed, and morale and initiative maintained. Co-operation by the employer, the industrial medical officer, and the trade union had produced, in his experience, a team in which the surgeon played an important part from beginning to end. The result had been the almost complete disappearance of litigation. The statistical difference between a socialized and non-socialized accident service is at least 10% expressed in terms of men returned to pre-accident work, and that was something very considerable when expressed in the return of workmen to the vital man-power of the country.

The Employer

Mr. GUY DE G. WARREN, as an employer, gave an account of the organization responsible for the development of the Berry Hill Centre. The Midland Colliery Owners' Indemnity Association was formed by a group of associated companies and was concerned to deal with the insurance risks of accident. It was not run for profit and represented the employment of over 100,000 men. With many others, they had been shocked by the state of the treatment of injuries as revealed in the report of the B.M.A. Committee on Fractures. The companies with which Mr. Warren was associated were able, first of all by subsidies, to ensure throughout the area the development of efficient fracture clinics, and this had resulted in an earlier restoration to some working capacity. It was soon appreciated that the lack of facilities for reconditioning prevented men from obtaining full recovery. The job was therefore completed by this rehabilitation centre, and it had been justified from the economic and from the humanitarian points of view. His opinion was that any national hospital scheme must include similar reconditioning schemes. From his experience he thought that one centre capable of dealing with 60 patients simultaneously could treat and discharge approximately 500 cases a year. As it would appear that of accident cases occurring in heavy industries and requiring hospital treatment 20% needed a course of rehabilitation, then one unit would be necessary for a hospital or group of hospitals dealing with about 3,000 such cases annually. On the other hand, the percentage of hospital accident cases other than those in heavy industries needing rehabilitation treatment should not exceed 8%. Therefore one unit should suffice to deal with a group of hospitals admitting 8,000 such cases a year. The workman must be dealt with in an atmosphere where he knew that everyone from the hospital to the employer was out to help. A man admitted to the centre was given the assurance of the surgeons that he could be improved and that work would be available for him afterwards. The growing utilization of industrial medical officers in factories would help to foster greater care for the injured man after his return to industry.

The Industrial M.O.

Dr. DONALD STEWART, speaking as an industrial medical officer, said that at present the position of production was paramount. It was being somewhat retarded by absenteeism, partly due to injury and sickness. Injuries were increasing, important factors being the amount of new and unskilled labour drafted into industry, often working under overcrowded and other difficult conditions. There was therefore overloading of the casualty and out-patient departments of hospitals in industrial areas, which had to carry on with diminished staffs and with difficulties in obtaining equipment and materials. There was thus a challenge to hospital services and the medical profession to see that an adequate service was maintained for people in production. Some particular problems were provided by young persons in industry, married women, and accidents at night-time and on Sundays in the factories working then. The industrial medical officer had an important function to perform, first of all in the general supervision of the conditions of work, and of measures designed to prevent ill-health and injury, the initial treatment of accidents, the follow-up of patients who could stay at work and of those who returned after treatment and rehabilitation. He was the one person who could interpret the wishes of the surgeon because of his knowledge of the conditions of work and the types of job available. There must be a steady improvement in the initial treatment of injuries. The sepsis rate was high, and insufficient care was taken of so-called minor injuries. In 1,000 consecutive accidents in one factory he had found that 52% were finger injuries only. Incapacity rate was great because they were not treated with the seriousness due to them. One big

problem was to provide an adequate service for the treatment of injuries in small factories which could not have their own medical units. In Birmingham, in order to meet that difficulty, they had proposed the provision of a travelling surgical unit, thus taking the hospital to the factory for the more serious injuries, which should be dealt with in the initial stage on the spot.

The Trade Unionist

Mr. J. L. Smyth, speaking from the trade union point of view, felt that more should be done to prevent accidents by ensuring proper selection of personnel so that people did not work on jobs for which they were unfitted. He made a plea for a greater understanding of each other's job as between the doctor and the workman. The ignorance of the doctor about working conditions was often responsible for much misunderstanding, particularly as it referred to certification under the Workmen's Compensation Act. At the same time the workman undoubtedly very often misunderstood the doctor's position. The doctor could do much to remove the prejudices of the less enlightened, among both employer and employed. He felt that the industrial doctor might be handicapped because he was himself an employee of the firm. His job, however, was to serve the workers, and probably he would himself prefer to be altogether independent of the management. Mr. Smyth deprecated the controversies arising in the courts between the individual worker and employer with lawyers and doctors ranged on either side to fight the matter out, which gave no satisfaction to anybody. The trade unions were delighted to have been associated with the development of the idea of rehabilitation centres such as had been outlined by Mr. Watson-Jones. Those centres already in existence had furnished practical demonstration of the value of the idea. The T.U.C. had recently given approval to the idea and called upon its general council to demand that the Minister of Health bring about an intensive development of this service, which would include mobile medical units. The compensation bogy must be destroyed. He would like to see standardized records at all hospitals and the preservation of continuity of treatment, and to see doctors in hospitals working closer together in a common policy on behalf of the nation with the resources of the country behind them.

General Discussion

In the discussion afterwards Sir Walter Citrine remarked on the big element of conservatism to be overcome on the part of both the medical profession and the workman. He felt that there was no place for the consideration of economic motives. Their noblest aspiration should be by skill and organization, whether in hospital or rehabilitation centre, to restore humanity and take away the disability produced by accident. Trade unions were willing to co-operate with anyone, whether employers or social agencies, if they were imbued with those high humanitarian ideals. Mr. G. Perkins of Roehampton emphasized the need for starting the work of reconditioning from the initiation of treatment in hospital and said that the work should be supervised throughout in both hospital and centre by the surgeon in charge of the case. Mr. R. Watson-Jones of Liverpool said it was just as important to avoid the fear and litigious atmosphere that might develop after injury as it was to avoid non-union of a fracture. Every fracture surgeon must be more than a craftsman: he must be a psychologist. The newness of the idea of rehabilitation was only in putting forward the psychological aspect so prominently. The British Orthopaedic Association deserved credit for its work in promoting fracture clinics and rehabilitation centres. The latter must not be a counterpart of the old massage department of hospitals. They must be geographically separate, with the advantages of open air, freedom, and separation from the hospital atmosphere. The problem to-day was far more than economic or humanitarian. This country was at war, and it was vital that every man should be back at work.

The President emphasized the important part played by Sir Robert Jones in the whole development of the idea of rehabilitation. It was he who in the last war had insisted on the value of active co-operation of mind and limb in the restoration of movement in stiff joints and in the restoration of muscle power and co-ordination. At the workshops at Shepherd's Bush Sir Robert showed what could be done for the reconditioning of the disabled. The tragedy was that so much of his teaching in this direction had been allowed to slide in so far as it affected the treatment of accident cases throughout the country.

In the course of the meeting a series of clinical papers were read and demonstrations given at the Harlow Wood Orthopaedic and Nottingham General Hospitals.

Those who made contributions were Mr. A. M. Birkett of Nottingham, Mr. R. G. Pulvertaft of Grimsby, Mr. J. P. Campbell of Nottingham, Mr. J. Grocott of Stoke-on-Trent, Mr. J. Hardman of Sheffield, Mr. L. H. Morris of Leicester, and Mr. S. A. S. Malkin and Mr. F. Crooks of Nottingham. Interesting groups of cases were demonstrated at both of the hospitals.

Correspondence

Tuberculosis and Milk

Sir,—The recommendation of the M.R.C. Committee on Tuberculosis (Oct. 10, p. 436) that "the pasteurization of milk should be extended throughout the country, and, where this is not practicable, all milk consumed by children should be boiled," has during the past 10 or 12 years been repeatedly urged by the People's League of Health, the Joint Tuberculosis Council, the Royal College of Physicians, and the British Medical Association. In spite, however, of this weight of authority the advice has had but a limited application. For this failure two reasons may be suggested. One is that the reports of scientific councils do not much engage popular reading; and the other, that the public is misled by such alluring titles as "clean milk," "pure milk," "accredited milk," and the like, and does not realize that none of these labels affords any protection against the risk of tuberculosis and other infections.

May I repeat the suggestion that where learned corporations have failed the individual doctor may readily succeed. Parents and the guardians of children, informed by their trusted medical advisers of the true position, would develop a public opinion that would demand "safe milk"—that is, "pasteurized milk"—and the fancy labels of the commercial advertiser would lose their unwarranted appeal. Further, in such an educational campaign medical practitioners would find a welcome opportunity in the practice of preventive medicine, and would discharge a responsibility that falls on the medical profession as guardian of the public health. What is spoken by trusted voices in thousands of homes is likely to have a wider and more immediate effect than many archives. The reward is promised in the words of the M.R.C. Committee: "If all milk for human consumption were pasteurized it is no exaggeration to say that tuberculosis of bovine origin would be eliminated."—I am, etc.,

Hove, 3. C. O. Hawthorne.

Classification of Nerve Injuries

Sir,—I am relieved to find that others than Dr. Russell Brain and myself feel their sensibilities disturbed by the neologisms that Prof. H. J. Seddon proposes to add to the already florid vocabulary of neurology. The subject must soon become totally unintelligible to all but those primarily concerned with it if this passion for diving into the lexicon is not checked. I will not here reiterate all the arguments I have already privately poured into Prof. Seddon's insentient ear against his adoption of this set of ill-sounding triplets, though I continue to wonder how he does not realize that the illimitable resources of our mother tongue are adequate to convey ideas and to state facts far more subtle than those presented by nerve injuries. Working as he does in Oxford, it is sad that Prof. Seddon is not willing to fight for the lost cause of English in medical terminology.

However, it appears that what seem to him the needs of a precise and unequivocal nomenclature require that he shall adopt these specimens of tortured Greek, made to serve a purpose for which they were never intended, and all I am now venturing to ask is how it comes that with standards so exacting

he has allowed himself to adopt the term "fibrin suture" (*Lancet*, July 25, p. 87) for the method of sticking together the two ends of a severed nerve by a few drops of plasma. "Suture" we all understand to mean stitching, and the *O.E.D.* informs me that it refers to the "joining the two ends of a severed nerve or tendon by stitches." "Fibrin suture," as he uses it, might perhaps pass as a rough workaday term were it not that Prof. Seddon has burst upon us as a terminological purist, ready to affront our ears and to shame our unfamiliarity with ancient Greek in the name of scientific precision. As I "gum suture" my stamp to the envelope that is to carry this letter to you, Sir, I wonder how Prof. Seddon will explain away his lapse from consistency. But I suppose that when even Homer nods another Greek writer may do the same without reproach.—I am, etc.,

London, W.1. F. M. R. WALSHE.

Crush Syndrome

SIR,—Following the demonstration of a "crush-kidney" syndrome in dogs,[1] research of a similar nature has been continued on cats (under nembutal or chloralose anaesthesia), during the course of which one fact of possible practical significance has come to light.

If the hind limbs are bound sufficiently tightly with rubber tubing to become completely ischaemic, as evidenced by reduction of foot temperature to that of the surrounding air, sudden release after 3 to 4 hours results in considerable impairment of renal function. In 11 such animals the average fall in creatinine clearance following this procedure was 51% (varying from 26 to 78%), although oliguria was prevented by infusion of sulphate-saline solution and blood pressure restored with gum-saline. In 7 animals in which the tubing was not tied sufficiently tightly to produce this degree of ischaemia an average fall of 24% (varying from 14 to 35%) in creatinine clearance resulted. If, however, the circulation is readmitted to such limbs gradually, no appreciable impairment of renal function can be observed. In 10 animals treated in this way the average change in creatinine clearance was +1% (varying from −9 to +16%). In one other, which was suffering from jaundice, a drop in clearance of 33% was noted, and later experiments on eviscerated animals suggest that the liver is responsible for detoxicating the blood coming from the ischaemic muscles, if sufficient time is allowed.

The process of gradual re-establishment of the circulation in the limbs is simple in the cat owing to the extreme richness of arterial anastomoses. Before untying the limbs, the aorta is clamped immediately above the bifurcation—i.e., below the lumbar arteries. After half an hour, with occasional gentle massage of the limbs, the femoral artery is clamped as high as possible and the aorta released. By this time the thigh has warmed up appreciably and the main vessels are full of blood. After a further half-hour, again with occasional gentle massage of the muscles, the femoral artery is released and full circulation thus established. Such a procedure is clearly out of the question in human casualties, but the same end-result might well be achieved in suitable cases by less drastic means.—I am, etc.,

University College, Leatherhead. M. GRACE EGGLETON, D.Sc.

Crush Injury and Anoxia

SIR,—In my letter on crush injuries (July 26, 1941, p. 139) I endeavoured to establish that, as suggested by Sir L. Hill (1941), the renal characteristics of the "crush syndrome" were due to *anoxia* following traumatic shock. From your columns it is evident that the belief is widely held that the crush syndrome is due to some obscure and still unidentified toxic derivative of crushed or necrotic muscle or tissue. The following considerations, however, militate strongly against such a belief.

1. According to Bywaters and Beall themselves (1941) the renal damage in cases of crush injury appears early and is progressive even though the crushed limb be amputated.

2. It is not possible to establish by cross-circulation or other methods that the blood of an animal suffering from traumatic shock (crushing of the limbs) is toxic (McDowall, 1940).

3. The characteristic degeneration of the epithelium of the renal tubules in crush injury is not found in infarction or absorption of blood clot (tissue necrosis).

4. The renal degeneration met with in crush injury is found in cases of injury where no crushing of muscles has occurred (Mayon-White and Solandt, 1941; Glen, 1941; Young and McMichael, 1941).

5. A condition similar to the renal failure of crush injury with similar degenerative changes in the convoluted tubules is found in the anuria of cholera persisting after successful restoration of the circulation by saline transfusions (Tomb, 1942).

In addition to the foregoing considerations it is to be observed that the fall in blood pressure which often follows the release of a tourniquet from an injured limb is not due to the liberation of toxins from the injured area, as is often assumed, but to the sudden enlargement of the vascular bed (McDowall, loc. cit.), associated no doubt in many instances with diminished blood volume due to incipient shock.

Anoxia may be produced, apart from circulatory defects, (1) by obstruction to breathing of the normal atmosphere (from strangulation, drowning, pneumonia, asthma, etc.); (2) by diminution of the oxygen content of the inspired air (as at high altitudes or in respiration chambers), and by its replacement by other gases such as CO_2, CO, CH_4, N_2O, etc.; (3) by diminished oxygen-carrying capacity of the blood (*a*) from the replacement of oxyhaemoglobin by methaemoglobin, carboxyhaemoglobin, or nitric-oxide haemoglobin, (*b*) from diminished blood volume (as in haemorrhage, collapse from cholera, and traumatic shock), (*c*) from diminished total haemoglobin content of the blood (as in hypochromic anaemia, haemolysis, and pernicious anaemia). In this connexion it is of special significance to note that Bywaters and Beall (loc. cit.) report that renal changes very similar to those met with in crush injury are found with anuria in cases of haemolysis due to incompatible blood transfusion ("transfusion kidney"). Similar degenerative changes of the renal tubular epithelium with anuria are also found in blackwater fever (Manson-Bahr, 1935) and in pernicious anaemia (Leftwich, 1920; Stieglitz, 1924), the common factor in all these cases being anoxia due to anaemia consequent on haemolysis or defective blood formation.—I am, etc.,

Sydney. J. WALKER TOMB.

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Splenectomy in Purpura Haemorrhagica

SIR,—Dr. Bruce Williamson (Oct. 3, p. 407) castigates Prof. Witts for his "levity" in advising splenectomy in purpura haemorrhagica. On Dr. Williamson's own admission he (with the late G. A. Sutherland) was responsible for the introduction into this country of splenectomy for this condition (1925). In 1926 in a paper "Recent Advances in the Diagnosis and Treatment of Purpura Haemorrhagica" (*Archives of Disease in Childhood*, **1**) he states in regard to splenectomy for this disease: "The results are so uniformly good that it appears to be only a matter of time before this disease is classified as curable by splenectomy. The results are comparable with those of splenic anaemia and acholuric jaundice."

In 1928 in my monograph *Acute Aplastic Anaemia* (p. 28) the following appears:

"The disease which bears Werlhof's name is really a conglomeration of diseases which have one condition in common—deficiency of platelets. There is only one of these conditions—thrombocyto*lytic* purpura—in which splenectomy is indicated, and unless evidence of destruction of platelets by the spleen is demonstrable splenectomy is contraindicated. Bruce Williamson, in a review of the literature of sixty-five cases of splenectomy for this condition, makes no mention of the thrombocytolytic character of the disease, nor does he mention the importance of considering the complete blood picture before deciding in favour of splenectomy. This is a serious omission in a paper bearing the title 'Recent Advances in the Diagnosis and Treatment of Purpura Haemorrhagica.' An analysis of the deaths amongst the cases cited by him suggests that the culpability of the spleen was not sufficiently established prior to operation."

Eggleton, Richardson, Schild, and Winton, *British Medical Journal*, 1942, **2**, 392.

During the 16 years which have elapsed since Dr. Williamson unreservedly advocated splenectomy as the ideal treatment for this disease I know of no publication by him in which he confesses his conversion to the views expressed by me in 1928. It is hardly fair of him, therefore, to deal so severely with Prof. Witts, who, in recommending splenectomy in his two cases of thrombocytopenia, was supported by the authority of the physician who introduced the operation into this country—Dr. Bruce Williamson.—I am, etc.,

A. Hayes Smith, M.D.

Trichlorethylene as General Anaesthetic

Sir,—The letter from Drs. Lloyd-Williams and Hewspear (Aug. 8, p. 170) recording fibrillation in a patient with non-toxic goitre under trilene anaesthesia has stimulated valuable comment from two of your readers. At the Royal Free Hospital we are constantly on the look-out for improvements, and it is the policy of the anaesthetic department to follow up every constructive suggestion offered to it. We are therefore grateful to Dr. Langton Hewer and Dr. Newton Price for their letters. May I say a few words in explanation of some of the methods we have adopted.

Intubation: While we are aware of the vagal reflexes which physiologists have told us can occur when the bronchial mucous membrane is insulted, it is possible to say that in more than 15 years, with an average of between 300 and 400 anaesthetics for thyroid operations a year, neither my colleagues nor I have seen any evidence of their existence. This may be due to the fact that our cases are "cocainized." It has often been said to us that thyrotoxic cases should not be intubated because without endotracheal tubes they can be maintained in a lighter plane of anaesthesia. With a moderate degree of cocainization and blind intubation this is not true; but because of such suggestions we have many times, for considerable periods, anaesthetized cases without intubation, only to return (often at the surgeon's request) to the original method. So far as possible we use only first-plane anaesthesia, but always with ample oxygen; our experience is that the complete freedom of airway, lack of anoxaemia, and good condition of the patient (checked in every case by blood-pressure readings) amply justify the method.

Novocain and adrenaline: We aim at a method of true anoci-association and regard the effect of the novocain as an important part of the anaesthesia. Except in those patients whose Goetsch test is positive, we have seldom found that a strength of 1/150,000 adrenaline has any effect on the pulse. In some cases which we infiltrated with adrenaline without novocain the skin incision and dislocation of the gland often produced reflex movement.

Dr. Newton Price's letter raises an interesting point. Premedication for thyrotoxic patients is always a difficult problem. For nearly a year we have been trying chloral hydrate in place of the more usual basal narcotics. So far we have used it in about 300 cases, and it seems to be satisfactory. Patients come to the theatre awake but in a condition which can best be described as "placid." A further communication on this subject is intended at a later date.—I am, etc.,

Stanley Rowbotham,
Major, R.A.M.C.

Shock Treatment in Psychiatry

Sir,—In your leading article (Oct. 3, p. 397) on shock treatment in psychiatry you rightly stress the importance of the early diagnosis and treatment of schizophrenic and allied conditions.

It appears a pity that shock treatment, like many other modes of treatment which have made a sensational entry into the medical world and have been abused by lay literature and press, is in grave danger of being used too indiscriminately, and thereby the value and the reputation of this mode of cure are liable to suffer. Many cases, unsuccessful because of unsuitable selection, will finally lead the practitioner and even the mental specialist to regard the treatment as useless, and thereby many cases really suitable will be robbed of their only chance of recovery.

I think we have to divide all cases suitable for shock treatment into two groups, the basis of division being the aim of the treatment. Shock treatment includes both insulin and convulsion treatment. Group 1 includes early cases of schizophrenia treated with some hope of complete recovery, or at least of keeping initial and slight symptoms stationary for many years. Group 2 includes all cases, early or those for which there is little or no hope of recovery or even prolonged remission; the treatment is purely symptomatic in aim.

Suitable for the first group are only very early cases—i.e., the treatment is begun within the first year of certification, or preferably at a time when a young person, though not yet requiring certification, shows definite signs of introversion and a progressively deteriorating schizoid personality. Unfortunately the present system of certification makes it practically impossible to get at these cases early enough, as the certification is naturally postponed until the illness is far advanced, and hardly anybody can be persuaded to enter a mental hospital for early treatment, even voluntary, in such early stages of the disease because of the stigma still attached to these places. It is therefore high time that general hospitals should open wards for the treatment of such early cases and not only dispensaries and observation wards. Such patients could then undergo successful treatment without being stigmatized for the remainder of their life.

In the selection of these cases it is important to consider the type of illness, the best prognosis being in acute katatonic cases with no family history and no background of mental deficiency. Gradually developing hebephrenics, unless treated very early, show little recovery. Many cases of confusional excitement which are actually incipient schizophrenics have a very good prognosis, and the argument of some critics that one will treat thereby many cases which would have recovered also spontaneously is not valid, because even a few cases of schizophrenia thus nipped in the bud will mean much to humanity.

As to the second group, it will have to be explained to the relatives that a complete cure is not hoped for but the patient will show some improvement. Some cases of acute katatonic excitement may thus be brought to rest, stuporous patients often become more amenable to nursing, and patients refusing their food will soon eat spontaneously. I would include in this group all advanced melancholics and involutional melancholics, which, though not schizophrenic, are often treated by convulsions. The results are in these cases usually only symptomatic.

It seems to me that these points must be kept in mind when selecting cases for shock treatment, and much disappointment will thereby be avoided.—I am, etc.,

Abergavenny. K. A. Graf.

Sulphonamide Sunlight Eruptions

Sir,—I read with interest the article on sulphonamide sunlight eruptions by Capts. R. G. Park and W. M. Platts (Sept. 12, p. 308). I feel, however, that some at least of their cases are capable of a different explanation from that given. After any considerable sunburning of the skin the capillaries of the sunburnt areas tend to dilate more readily than those of normal areas, even after the obvious signs of sunburning have disappeared. This undue reactivity of the capillaries shows up whenever the patient develops a widespread erythema, which will be more obvious on the previously sunburnt parts, and it can easily be demonstrated by a hot bath. I therefore suggest that some of the cases recorded are not due to a true actinic sensitization but are merely an ordinary sulphonamide rash appearing most conspicuously on areas previously affected by the sun. I make this suggestion for the following reasons. The eruption usually appeared about the eighth to the tenth day, the usual time for an ordinary sulphonamide rash; in many cases unexposed parts were also involved, which is very uncommon in actinic dermatitis; some patients developed the rash even though they were not exposed to the sun after taking the drug; the sensitivity disappeared in two to four days, which is more rapid than in other types of actinic dermatitis such as that from eosin.

While fully admitting the possibility of sensitization of the skin by sulphonamides, I feel the diagnosis should only be made after due regard to these considerations lest these drugs gain an undeserved evil reputation.—I am, etc.,

F. F. Hellier,
Major, R.A.M.C.

Nomenclature of Night-blindness

SIR,—We must all feel grateful to Dr. John Ware for his historical and classical contribution (Oct. 3, p. 409). His suggestion of "nyctamaurosis" and "nyctamblyopia" is reasonable if it is really necessary to have two substantives to indicate different degrees of blindness; but "complete" and "partial" seem to fill the bill pretty well. My preference for "nyctamaurosis" over "nyctamauroma" is based on the desire for consistency (or even logic) with its lightening of the tax on our memories. However it may have been in old times, it is indisputable that for many years past new words ending in "oma" have all indicated a tumour, either of a definite character or in a definite situation; their name is legion. On the other hand, whenever we have wished to indicate a process, general condition, or infestation we have invariably applied the termination "osis"; the most up-to-date example is, I think, "avitaminosis." It is true that there are a few "omas" (or "omata") which are not indicative of tumour formation, but they are so few that they can be easily remembered as exceptions to the rule. Why tax our memories with another exception (and perhaps more to follow) when by playing the game according to the modern rules we could play it almost with our eyes shut?—I am, etc.,

Ambleside. J. PRICE WILLIAMS.

SIR,—It would almost seem that some telepathic influences have been at work, for Dr. John Ware (Oct. 3, p. 409) has travelled along the same mental path that I have trod, even to realizing more fully that our English language is far from being absolute. Purblind, nearly blind, short-sighted: (orig.) wholly blind, is an excellent example. Dr. Ware goes the length of agreeing with me that *oma* may indicate something concrete or it may not.

"Nyctalopia" and "hemeralopia" we unanimously abandon, but we reach different destinations. To reach his he is willing to put a new meaning into the established words "amaurosis" and "amblyopia," the former meaning for him "complete loss of vision without qualification"; the latter, "partial loss of vision without qualification." In other words, we are asked to put new wine into old bottles. If we attempt this the bottles will break and the wine run out. I prefer to use two new words, "nyctamuria" and "nyctamauroma," for in doing so I put new wine into new bottles and both shall be preserved.—I am, etc.,

London, W.1. FRANCIS E. PRESTON.

Sedimentin Index and Sedimentation Rate

SIR,—May a hard-worked general practitioner raise his small voice in this controversy? Dr. P. Edwards and Mr. L. J. Cuttrill, writing from Market Drayton Sanatorium (Sept. 26, p. 379), have stated *ex cathedra* that "any test should be as simple as possible and give the maximum of reliable information"; the more I study this statement the less sense can I make of it. I think I know what they mean; but even so, it isn't true. From what little I have seen of sanatorium practice I have long since come to the conclusion that in the world of tuberculosis tests, which began life by being simple, tend with the increase of knowledge and experience to become more complex in technique. For example: (1) Temperature-taking ceases to be a matter of thrusting a thermometer under the tongue for a roughly guessed minute (or, simpler still, of laying the hand upon the brow), and becomes a ritual wherein the patient lies completely relaxed for half an hour before warming the thermometer for two minutes in his rectum. (2) *X*-ray examination ceases to be a matter of snapshots, and now involves in addition lengthy and careful screening of each area of the lung field and mediastinum with the patient twisting this way and that. To make it more effective the radiologist has to spend some valuable time beforehand in the dark in order to accommodate his eyesight. (3) Sputum examination, too, it seems, is no longer entirely a matter of a stained smear, but involves concentration, culture, and animal inoculation. I will refrain from drawing the obvious conclusion, and merely condole with all sanatorium physicians (especially those at Market Drayton) that so much of their leisure should be encroached upon by these time-consuming "refinements."

May I now presume to contribute my personal experience of the blood sedimentation test from the G.P.'s point of view? I started determining sedimentin indices in general practice just over a year ago, and soon found not only that the information I derived from them was more useful than that given by the Westergren readings, but also that the procedure was actually less bother. You see, neither I nor my dispenser could be guaranteed not to forget—or, if we remembered, not to be otherwise involved—when the exact moments came round to take the hour-readings; whereas with the rack of six tubes on my (or her) desk it is the simplest matter to note the different "falls" every ten or fifteen minutes between, and even during, consultations. On my round of visits I have on the car floor the rack of bloods taken from bed patients, so I can note and record the "falls" every time I stop the car, and again just before I proceed on my way. This takes less than twenty seconds; I know because I've timed it. I can't help feeling that Dr. Clarke Penman (also writing from Market Drayton) is exaggerating when he complains that it takes five times as long as the Westergren readings and that the observer cannot "settle to any other work." Why, with my own eyes I have seen a sanatorium physician with his rack of tubes in the operating theatre, taking readings between refilling his patients' A.P.s. No. The chief obstacle to index determination, I think, is having to look up the logarithm of a number in a book of log tables. So many of us have forgotten how to do it, and so few have the meekness to ask our children.

By means of the sedimentin index it would seem, although I may be mistaken, that not only can one ascertain whether a patient is suffering from a destructive disease process, but that one can *measure* (in a new sort of way) *how ill* it is making him. A series of weekly or monthly determinations reveals the patient's rate of progress, and enables one to forecast with some accuracy how long it will take him to get well again—if he continues to progress at the same rate. It also shows you whether your treatment is making the slightest difference to his rate of progress. This information is not revealed by the first-hour Westergren technique—or even the second-hour. But of course I should no more dream of bringing the Westergren technique into disrepute than I would the taking of mouth temperatures or *x*-ray snapshots. And no less.—I am, etc.,

Norfolk. RURAL PRACTITIONER.

"Silent" Sinusitis

SIR,—Mr. Edward D. D. Davis (Oct. 10, p. 441) states that sinus disease as a cause of visual disturbances is very rare, and then quotes 54 cases of retrobulbar neuritis of which only 5 (or 9% of the total) were, in his opinion, of nasal origin. These figures suggest to me that sinusitis should be classed as a common cause of retrobulbar neuritis, not as a very rare cause.

Mr. Davis then goes on to make the extraordinary statement that to the honest rhinologist silent sinusitis does not exist. If by silent sinusitis Mr. Davis means the type of infective and allergic origin to which I referred in my letter (Aug. 22, p. 230), then I resent very much his implication, not in its application to myself, as I am not a rhinologist, but in the application to several of my rhinologist friends, who, even if they do differ in their views from Mr. Davis, could never be anything else but honest. Dr. W. Edwards (p. 441) remarks that the proof of the pudding is in the eating, and if silent sinusitis does not in point of fact exist, how does Mr. Davis explain the fact that every case of migraine which I have treated has been considerably improved, if not in fact cured, by ephedrine replacements?—and this applies to many cases which have been investigated, with negative findings, by rhinologists.—I am, etc.,

Alderley Edge, Cheshire. J. J. CRAIG.

SIR,—The letters of Mr. Terence Cawthorne and Mr. Edward Davis lead one to think that they view the success of the practice of medicine only from the point of view of the suffering patient. It is incredible that consultants can be so far out of touch with the times in which we live. Even in Hogarth's time it was said: "The ancients tried to make medicine an art and failed; the moderns have tried to make it a trade and succeeded."

Recently I took under my care a case of certified insanity, within seven days of the time when the patient was to undergo two operations for silent sinusitis, each operation carrying a surgeon's fee of 100 guineas. The patient had never at any

time had signs or symptoms of sinusitis. Transillumination, radiographic examination, and culture of antral wash-outs gave negative results. The surgeon who had advised the operation further stated that it was typical of such cases of silent sinusitis that no alteration was to be found in either the B.S.R. or the differential white cell count. This disease, though insidious, is apparently diagnosed with ease by the typical absence of all evidence of disease in the sinuses.

The patient made a complete recovery without surgical interference, which, however fortunate for the patient, might be regarded as less fortunate for the surgeon. Certain organic nervous diseases, abnormal mental states, rheumatic conditions, and pulmonary diseases, to mention but a few, are typically remittent in their course, and obviously offer a fruitful field for the invocation of treatment for silent sinusitis.—I am, etc.,

London, S.E.24. KENNETH MCFADYEAN.

SIR,—Mr. Terence Cawthorne (Sept. 26, p. 379) appears to want to minimize the value of the communications made by Dr. Rosa Ford and Dr. J. J. Craig. No one wishes to operate on healthy nasal accessory sinuses, but his letter conveys the suggestion that these two workers have done so. Perhaps Mr. Cawthorne would describe the radiological evidence which he considers sufficient on which to class sphenoidal and ethmoidal sinuses as healthy or diseased. Would he require proof puncture also in the case of these sinuses; if so, what method does he consider sufficient to demonstrate disease in these sinuses?—I am, etc.,

Powick, Worcester. H. F. FENTON.

SIR,—I find Miss Rosa Ford (Oct. 10, p. 441) crossing swords with Mr. Terence Cawthorne over his criticism of slack diagnosis of sinusitis. We are asked to alter our canons of paranasal diagnosis on the evidence of two cases, now somewhat hoary. In the face of this evidence it is surely pertinent to ask why we should alter our customs. It is my view that the so-called evidence contained in these cases amounts to no more than evidence of loose thinking.—I am, etc.,

Newcastle-upon-Tyne. F. MCGUCKIN.

SIR,—Long experience has taught me the truth of Mr. E. D. D. Davis's statement that for the rhinologist "silent sinusitis" does not exist. In the two cases of which I gave details in the *Journal* (Aug. 1, p. 128) "silent sinusitis" did not exist for any of the four rhinologists concerned. In consequence both patients were obliged to suffer desperately from headaches for at least 7 years. Such helpless suffering is very prevalent, and would be quite needless if the silence in which sinusitis can wrap itself could be broken, either by such means as Mr. Davis advocates or by those I have suggested, which seem to me simpler and more widely applicable.—I am, etc.,

London, W.1. ROSA FORD.

*** This correspondence is now closed.—ED., *B.M.J.*

"Female Circumcision" among the Kikuyu

SIR,—"Female circumcision" as it exists among the Kikuyu (Kenya) is an operation which varies in severity, some sections of the tribe practising a more drastic form than others. The following is a generally accepted description of the "major" operation:

> "It involves the removal of not only the clitoris, but also of the labia minora and half of the labia majora, together with the surrounding tissue, resulting in the permanent mutilation affecting the woman's natural functions in micturition, menstruation, and parturition, with disastrous results not only to the birth rate, but also to the physique and vitality of the tribe."

The so-called "minor" operation is that of clitoridectomy, now adopted by some sections of the tribe as the result of advice and pressure from Government. The missionaries, many of whom are medical men, and nurses have spoken of "the sexual mutilation of women" as being a more correct term than "circumcision." Besides the severity of the operation, and its effects—physical and psychological—on the girls at puberty, bleeding is often profuse at the time of operation and sometimes leads to death. There is always extreme inflammation and extensive cicatrization of the parts affected. Afterwards, normal menstruation is interfered with and sometimes coition prevented. It is significant of the frequency of this result that the Kikuyu have a special word to denote it—"nduri." Plastic operation to relieve this condition is of frequent occurrence in mission hospitals. The most disastrous results of the operation occur at times of childbirth, especially with primiparae. Labour is always delayed and mother or child, or both, often die in consequence of the unfavourable conditions caused by the operation. When mission hospitals were established it was found necessary to make incisions, sometimes several, in order to enable a child to be born.

As the result of a strong stand taken by some of the missions working among the Kikuyu from 1916 on, many Christian girls are now saved from this operation, and thus in certain areas the custom is becoming a thing of the past.—I am, etc.,

Dunbog, Newburgh, Fife. JOHN W. ARTHUR, M.D.

Woman-power and Maternity

SIR,—I should like to draw attention to the fact that in your report of the National Conference on Maternity and Child Welfare (Oct. 3, p. 404) reference is made to maternity legislation in Germany and Japan, while the notable achievements of our Soviet ally in this respect are completely ignored. We can find much assistance in the solution of the problems of woman-power and maternity by reference to the special measures which have enabled the women of Soviet Russia to play such a large part in the development and in the defence of their country.

Every pregnant mother in the Soviet Union in peacetime is entitled to a minimum of 56 days' maternity leave before and after confinement (reduced to 36 days before and 28 days after during the war). This is extended to cover half-hour periods every 3½ hours during the nursing period, and subsequently such time as may be authorized by the child's doctor in respect of any illness on the part of the child. Maternity leave is on full pay, and these extensions of maternity leave entail no deduction from the mother's normal salary. Furthermore, on registering at an ante-natal clinic she is entitled to various privileges, such as transference to lighter work if she is on heavy work, and exemption from any night work. Production of her ante-natal card also ensures an expectant mother priority in other spheres, such as shopping and transport.

These are the special provisions of immediate interest to us in the welfare of the pregnant woman in industry and the essential services. There are many others, and those who are interested will find a more detailed account of maternity legislation and the work of the scientific institutes for the protection of mother and child in Prof. Sigerist's book *Socialized Medicine in the Soviet Union*.—I am, etc.,

Southall. JOAN K. MCMICHAEL.

Medical Planning Now

SIR,—Owing to wartime difficulties the proceedings of the A.R.M. have been reported rather briefly, and as the result I believe certain important points which greatly impressed the meeting have been lost sight of.

I had previously believed that we would serve our colleagues in the Services best by making no changes in their absence and arriving at no final decisions until they return. And this has been the view expressed from time to time by correspondents in the *Journal*, who feel that we ought to safeguard the interests and future of our absent colleagues. But at the A.R.M. a most striking speech was delivered by a member who stated that he was in the Services, having left his practice to join up. He said that he had taken advantage of a period of leave to attend the A.R.M. I regret I do not remember his name, but from the brief summary in the *Supplement* of Sept. 19 (p. 31) I think it may have been Dr. W. E. Dornan of Sheffield. He appeared to have no illusions about politicians. He urged us on behalf of those absent in the Services to make our plans now, and carry them into effect while our bargaining power was high and before over 10,000 doctors were suddenly thrown on the labour market by post-war demobilization, thereby practically destroying our bargaining power, a situation he expected the politicians to exploit to the full.

I had not realized this obvious danger, and I feel sure that many doctors do not fully appreciate it. Therefore it seems to me advisable that the fullest publicity within the profession should be given to pointing out this risk, in order that measures may be adopted to prevent it.—I am, etc.,

Hove. H. J. MCCURRICH.

Post-war Planning and Winning the War

Sir,—Your issue of April 11 has just reached me and I have read the letter of Mr. R. Watson-Jones with interest. Surely he is right in suggesting that too much time may be spent now in discussing the post-war organization of medicine. Is it not better for the profession to concentrate on maintaining and increasing our war effort? And is it not also clear that any new arrangements should only come into existence when those of us now abroad have had time to come home, look round, and give our considered opinions in a calmer atmosphere than is now possible? The profession has had many unfortunate experiences of high-handed and arbitrary action by Government. The liveliest resentment will be felt if, on our return home, we are presented with a professional situation we dislike and in the shaping of which we have had no voice.

I suggest that the B.M.A. should secure a pledge from the Ministry of Health that no major changes affecting our livelihood will be allowed until most of us serving temporarily with the Forces abroad have been able to return home and look round. After all, we are supposedly fighting for a charter which is to free mankind (doctors included) from arbitrary action by the State or any other powerful authority. Having seen hospitals used as vote-catching machines I would urge that politicians be given no control in any future scheme. They are the last to remember that in a properly conducted profession or service those in control should extend their loyalty to the subordinates below—without which no proper loyalty to those at the top is possible.—I am, etc.,

G. C. Pether,
T/Major, R.A.M.C., Middle East Forces.

Universities and Colleges

UNIVERSITY OF CAMBRIDGE

On Friday, Nov. 13, Prof. Major Greenwood, F.R.S., will give a lecture on "Origins of the Scientific Study of Population," and on Friday, Nov. 27, Dr. H. P. Bayon will lecture on "Disease as a Determining Factor in War." Both will be delivered in the lecture theatre at the Arts School at 8.30 p.m., and they are open without fee to all members of Cambridge or London Universities or of Girton or Newnham Colleges.

At a Congregation held on Oct. 1 Dr. J. A. Venn, President of Queen's College, resigned the post of Vice-Chancellor and was readmitted for the year 1942-3. In the course of his address reviewing events of the past academic year Dr. Venn announced that the Rockefeller Foundation had again continued its grant of £1,200 for research in cellular physiology at the Molteno Institute, and is providing £450 a year for a research grant for Dr. Joseph Needham. Mentioning the bestowal of the Order of Merit upon Prof. E. D. Adrian, he said that this reflected the importance of work recently undertaken for the nation. In addition to 15 vacant Chairs there are now 16 Professors, together with 3 Readers, absent on national service, and out of 370 university lecturers and demonstrators only 143 remain in Cambridge. Several of the former holders of professorships have consented to remain in charge of their departments for the time being.

The Final M.B. Examination will begin in the present term on Monday, Dec. 7, a day earlier than is prescribed by Ordinance, the written examination for Part I being held that day and for Part II on Dec. 8 and 9. Names of candidates for the M.Chir. Examination should be sent to the Registrary by Dec. 29; the examination begins on Feb. 16.

UNIVERSITY OF SHEFFIELD

The following candidates have been approved at the examination indicated:

Final M.B., Ch.B.—*Parts II and III*: H. M. A. Ansari, Josephine Hall, J. D. H. Linfoot, E. R. Monypenny, Ethel M. Spedding, R. L. N. Stewart, Joan Williams.

ROYAL COLLEGE OF SURGEONS OF ENGLAND

At a quarterly meeting of the Council, held on Oct. 8, with Sir Alfred Webb-Johnson, President, in the chair, it was decided to increase the membership of the Court of Examiners from 17 to 20. The Council decided to offer the use of the library as a meeting place for Canadian and American medical officers.

Mr. A. J. Graham was nominated as the fiftieth Jenks Scholar. A Leverhulme Scholarship was awarded to F. K. Sanders, M.A., D.Phil.Oxon, for a year from Sept. 30. Subject of research: Problems connected with the repair of peripheral nerve injuries.

Dr. Douglas E. Lea was nominated for reappointment as a Prophit Student for 1943 and Dr. Lilian Helena Walter was nominated for appointment as a Prophit Student as from Aug. 18, both for cancer research. Dr. Geoffrey Bourne has been reappointed a Mackenzie Mackinnon Research Fellow for a second year from Oct. 1. A vote of thanks was accorded the trustees of the Powell-Cotton Museum for a generous donation of comparative osteological material given as a token of sympathy with the College in the disaster to the museum. The general annual report and the scientific report on the Museum and Research Laboratories were approved and copies will be sent to such Fellows and Members as apply for them.

Diplomas of Membership were granted to T. D. Kellock, H. G. McQuade, J. R. K. Preedy, D. S. Short, Edith M. Waterhouse, J. F. R. Withycombe.

Diplomas in Child Health were granted, jointly with the Royal College of Physicians of London, to the following candidates:

A. P. Bentall, E. Emanuel, E. G. Fox, J. F. Galpine, Aitolia Georgiadis, Margaret E. Harker, D. C. Jackson, Elizabeth B. S. Scobbie, Vera Settle.

Obituary

F. G. CHANDLER, M.D., F.R.C.P.

We regret to announce the death on Oct. 8 of Dr. F. G. Chandler, physician to St. Bartholomew's Hospital and senior physician to the London Chest Hospital, Victoria Park, E.

Frederick George Chandler was born at Sutton, Surrey, on July 25, 1885, and from the Leys School entered Jesus College, Cambridge, with a scholarship and gained first-class honours in the Natural Sciences Tripos of 1908. He went on to St. Bartholomew's Hospital, took the English Conjoint Diplomas in 1911, and the M.B. and B.Ch. degrees a year later. For his Cambridge M.D. thesis in 1917 he won the Raymond Horton-Smith prize. After holding a house-physiciancy at Bart's he was appointed medical registrar at the London Hospital in 1913, but was seconded from this post during the last war, when he served with a temporary commission in the R.A.M.C. as regimental medical officer to the 2nd Argyll and Sutherland Highlanders, and later as medical specialist at a casualty clearing station. On returning to civil practice in 1919 he took the M.R.C.P. and was elected to the visiting staff of the Victoria Park Hospital, where he did excellent work, and after two years as casualty physician at Bart's he became assistant physician and medical tutor at Charing Cross Hospital. He was elected F.R.C.P. in 1925. Chandler's promotion was rapid at Charing Cross, but about twelve years ago a vacancy occurred at St. Bartholomew's and he was elected assistant physician. He was also on the consulting staff of King Edward VII Sanatorium and of the Hospital for Tropical Diseases. His book, written jointly with Dr. W. Burton Wood, on *Lipiodol in the Diagnosis of Thoracic Disease*, appeared in 1928.

[*Press Portrait Bureau*

Chandler joined the British Medical Association in 1923 and was a member of the Consultants Board at headquarters for the past ten years. He held office as honorary secretary of the Section of Medicine when the Association met at Bath in 1925, as vice-president of the Section of Public Health (including tuberculosis) at Bournemouth in 1934, and as vice-president of the Section of Tuberculosis at Plymouth in 1938. He was an enthusiastic worker, with varied interests outside his profession, including music and botany.

Sir Percival H.-S. Hartley sends the following appreciation:

By the death of Dr. Frederick Chandler the profession of medicine loses one whom it can ill spare, for he was a man of high principles and wide culture, one who had already made his mark in his profession, and would have attained even higher eminence had he been spared. A classical scholar of Jesus

College, Cambridge, he afterwards entered St. Bartholomew's Hospital, becoming later my house-physician and proving one of the very best with whom it has been my privilege to work. There being no immediate vacancy in prospect at St. Bartholomew's he became medical registrar at the London Hospital, and then assistant physician at Charing Cross, but was later recalled to his "Alma Mater" and appointed assistant physician and later physician to St. Bartholomew's. Meanwhile he had made his reputation at the Victoria Park Hospital as a physician skilled in chest diseases, and was one of the pioneers in England of the delicate operation of dividing the pleural adhesions which prevent the full efficacy of an artificial pneumothorax, thus greatly increasing its value. For his eminence in chest work he was appointed—with the approval of H.M. the King—one of the consulting physicians of the King Edward VII Sanatorium, Midhurst. Here he did valuable work, rapidly endearing himself to his colleagues by his devotion to duty and charming personality. He was in middle life, and in the heyday of his success, when he suddenly, a few months ago, found himself smitten by a mortal disease. But with the utmost fortitude and Christian resignation he accepted the position and with cheerful courage continued to receive his friends, never once allowing himself a single word of complaint. He passed away peacefully at his home at Newdigate, Surrey. Of his happy family life, and the deep devotion and courage of his wife, who nursed him tenderly to the end, it is not for me to speak. But the hearts of all who knew him go out to her and their children in their sorrow and distress. Men like Dr. Chandler, followers of St. Luke in the highest and best sense, our profession can ill afford to lose, and it is with emotion and heartfelt sorrow that we say farewell.

ROBERT CECIL ROBERTSON, *M.C.*, M.D.

News has been received of the death in Hong Kong on August 4 of Robert Cecil Robertson, professor of pathology and bacteriology at Hong Kong University. Dr. Robertson was born in 1890 at Kilmarnock, and entered Glasgow University, graduating in medicine just before the outbreak of the last war. He served with the R.A.M.C. during that war and gained the Military Cross. Afterwards he resumed his medical studies, and in 1919 took the M.R.C.P.Ed. and the D.P.H., in 1920 the F.R.F.P.S., and a year later the M.D.Glasg., with commendations.

Robertson chose a career in the Far East, and for many years was a member of the staff of the Henry Lester Research Institute in Shanghai, serving as head of the Division of Pathology. He was also assistant pathologist to the Shanghai Health Department. His appointment to the chair at the University of Hong Kong was quite recent; he took up his work there only in 1940, and his brief tenure was thus an adventurous and troubled one owing to the spread of the war in the Far East and the occupation of the colony. He was exactly the type of man to represent Great Britain in that part of the world—a man of boundless physical and moral courage, a keen humanitarian, and a vigorous champion of the cause of the Chinese, among whom he had hosts of friends. He was robust in the expression of his views and strove zealously to improve the hygiene of the Chinese populations. He served as commissioner of the League of Nations anti-epidemic unit No. 2, which made health surveys in China, and in that capacity carried out some important missions. His epidemiological survey in 1939, when he tackled the difficulties of the Burma Road and presented a valuable report to the League Commission, is specially notable. He distinguished himself greatly in the rescue and rehabilitation work following the Yangtze floods in 1931. In August, 1937, when the Chinese attacked the Japanese flagship at Shanghai and bombs fell disastrously in the International Settlement, Robertson was officially reported among the 2,000 dead, but the anxiety of his relatives in this country was presently relieved by a laconic cablegram from him bearing the single word "unharmed." He contributed occasional papers to the specialist medical journals, in particular studies on the bacteriology and treatment of fevers in Shanghai. Unfortunately, his acceptance of the position in Hong Kong, where in other circumstances he might have done a very great work, was followed almost immediately by a breakdown in health, and in 1940, owing to continued illness, he ceased to belong to the Reserve of Officers. He was a member of the B.M.A. from 1917 until 1942.

In the off times of a very active career Robertson turned to the painting of pictures, in which his wife, a Scottish lady, also excelled. A picture of his painted in Shanghai was hung in the Royal Academy in 1937. He was also an accomplished photographer and an ardent scientist in many directions apart from those which constituted his lifework.

JOHN WALTER CARR, C.B.E., M.D., F.R.C.P., F.R.C.S.

Dr. J. Walter Carr, for many years a well-known physician in London, died on Sept. 29 at Hampstead. He was a Londoner by birth and education, and in London he spent the whole of his professional career. He entered University College and Hospital for his medical training, qualifying in 1884, and taking his M.B., B.S.Lond. with first-class honours in medicine, obstetric medicine, and surgery. In 1887 he proceeded M.D., and became a Fellow of the Royal College of Surgeons in the same year. His principal hospital association was with the Royal Free, where he was for many years physician, and, after his retirement from the active staff, consulting physician. He was also lecturer in medicine to the London School of Medicine for Women, which is associated with that hospital. Another institution he served with great devotion was the Victoria Hospital for Children at Chelsea.

Dr. Carr, who became Fellow of the Royal College of Physicians of London in 1901, served the college in many capacities—as a member of its council, an examiner, and, in 1926-7, as censor—and he attended Comitias up to the present year. He was also examiner in medicine to the University of Birmingham and the Society of Apothecaries. For a number of years he was a prominent member of the Medical Society of London, and in 1928 was elected its president. He had also been president of the Clinical Section of the Royal Society of Medicine. In all these capacities and others he gained the esteem and regard of his professional colleagues to an unusual extent. Forty years ago he published, jointly with three colleagues (T. Pickering Pick, Alban Doran, and A. Duncan), *The Practitioner's Guide*, and in 1916, when he himself was in the middle fifties, he wrote a book entitled *How to Live Long*, and verified its precepts by living for another quarter of a century; he was in his eighty-first year. Apart from these, he wrote numerous papers on medical subjects, particularly articles in various textbooks on tuberculosis and diseases of the pleura and mediastinum.

In 1920 he was made Commander of the Order of the British Empire, and in 1929 he had the unusual honour for a medical man of being elected Master of the Haberdashers Company, which stands high in precedence among the great City guilds. Dr. Carr retired from active practice several years ago, but he continued to live in London, and followed his favourite recreations—walking and travelling. His wife died in 1937, and he is survived by a son and three daughters.

The Services

The D.S.C. has been awarded to Temp. Surg. Lieut. G. MacBain, R.N.V.R., for courage and devotion to duty in North Russian waters, and to Temp. Surg. Lieut. A. W. Clark, R.C.N.V.R., for bravery, endurance, and devotion to duty in action against the enemy in the Mediterranean.

Temp. Surg. Lieuts. D. R. Barry and S. G. Hamilton, R.N.V.R., have been mentioned in dispatches for bravery, endurance, and devotion to duty in action against the enemy in the Mediterranean and for great bravery and devotion to duty when H.M.S. *Prince of Wales* and H.M.S. *Repulse* were sunk by Japanese aircraft respectively.

CASUALTIES IN THE MEDICAL SERVICES

Acting Lieut.-Col. Cornelius McGrath, R.A.M.C., who is included as "died" in an Army Council Casualty List published on Oct. 1, graduated M.B., B.Ch., B.A.O. of the National University of Ireland in 1936. He immediately entered the R.A.M.C., was promoted capt. a year later, and recently became major.

Major James Grant Morrin, R.A.M.C., is included as "died" in an Army Council Casualty List published on Oct. 1. Educated at St. Mungo and Anderson Colleges, Glasgow, he took the Scottish triple qualification in 1912, and served in the R.A.M.C. in France in the war of 1914-18, attaining the rank of capt. After demobilization he settled in practice in Lambeth

in 1922 and represented his constituency at the Annual Representative Meetings of the B.M.A. at Belfast in 1937 and Plymouth in 1938 and was honorary secretary of the Lambeth and Southwark Division in 1938-9. On the outbreak of the present war he was immediately recalled for service.

Major DOUGLAS JAMES STIRLING ARMSTRONG, R.A.M.C., has died on active service in Malta. He was educated at the University of Glasgow, where he took the degrees of B.Sc., M.B., Ch.B. in 1938, and the D.P.H. in 1940. He was a member of the B.M.A. A. G. H. writes: When the full story of the epic defence of Malta comes to be told, the name of Dr. Armstrong will be found to occupy a prominent place. Joining the R.A.M.C. as a volunteer shortly after the outset of war, he was appointed in January, 1941, as commanding officer, 57th Field Hygiene Unit. He thus became, at the age of 25, sole consultant and adviser in hygiene to the military garrison of Malta. Up till the time of his death there were considerable periods when, by enemy action, light, ventilation, water, and sanitary facilities in great portions of the command were completely abolished. Despite these tremendous difficulties, the hygiene of the garrison remained at the highest possible level. These are bare facts. The decorations and well-earned honours would, no doubt, have followed. The present writer had the privilege of knowing Armstrong during the winter of 1941 and in the unforgettable spring of 1942 in Malta. Then, under the most ferocious aerial bombardment of a single small target, Major Armstrong in his equanimity and perseverance showed all those characteristics of courage and endurance which have distinguished great Scotsmen. When his headquarters were hit for the third time and almost completely destroyed, he remained unperturbed and set about the heavy work of reorganization swiftly and efficiently. To everything he did during these hectic eighteen months he added a touch of distinction and individuality entirely his own, whether in painting those water-colours of post-mortem lung-blast appearances which we in his profession will later admire, or whether investigating epidemic jaundice.

Surg. Lieut. ROBERT DAVIES ROYDS, R.N.V.R., who has died in a hospital in Algeria, was born on July 8, 1914, the elder son of Mr. and Mrs. R. Royds, and was educated at the Grove Academy, Broughty Ferry, and at St. Andrews University, graduating M.B., Ch.B. in 1937. Appointed a Carnegie research scholar, he worked under Prof. D. F. Cappell at University College, Dundee. He entered the R.N.V.R. in July, 1940, and had been interned in Algeria since his ship, H.M.S. *Havock*, ran aground.

Wounded.—Major M. E. M. Herford, M.B.E., R.A.M.C.

Wounded and Prisoner of War.—War Subs. Capt. R. J. F. Howe, R.A.M.C.

Prisoners of War.—Capt. W. Falconer, R.A.M.C., Capt. F. E. Gallash, A.A.M.C., Lieut.-Col. L. E. Le Souef, A.A.M.C., Lieut.-Col. J. T. Lewis, R.A.M.C., Capt. M. Mayrhofer, A.A.M.C., Major J. D. Palandri, A.A.M.C., Surg. Lieut. E. C. Powell, R.N.V.R., Major J. W. Redgate, R.A.M.C.

Missing.—Capt. A. E. Brewer, R.A.M.C., Capt. B. A. Hunt, A.A.M.C., Major B. W. Nairn, A.A.M.C.

DEATHS IN THE SERVICES

Major-General Sir SAMUEL GUISE GUISE-MOORES, K.C.B., K.C.V.O., C.M.G., late R.A.M.C. (ret.), died at Cheltenham on Oct. 3, aged 78. He was born at Deesa in Gujarat on Dec. 24, 1863, the son of Col. S. Guise-Moores of the Devon Regiment, and was educated at Cheltenham College and at St. Thomas's and King's College Hospitals, taking the M.R.C.S., L.R.C.P. in 1888 and the D.P.H. in 1898. After filling the post of house-surgeon to the East Devon and Cornwall Hospital at Plymouth, he entered the Army as surg. in 1890, became col. in 1915, major-general in 1920, and retired in 1923. He had a long and very distinguished career. His first war service was in the Chitral campaign of 1895, with the relief forces (medal and clasp). He also served in the South African War, in the relief of Kimberley, and in the actions of Belmont, Enslin, Modder River (wounded), and Magersfontein, and later in the actions of Poplar Grove, Vet River, Pretoria, and Diamond Hill (twice mentioned in dispatches, Queen's medal with 6 clasps and King's medal with 2 clasps). In the war of 1914-18 he served throughout in France and Flanders in administrative posts and was A.D.M.S. of several successive divisions at Ypres, on the Somme, and at Passchendaele. In 1917 he became D.D.M.S of the 11th Corps and later D.M.S. of the 2nd Army and of the Army of the Rhine (mentioned in dispatches five times). In 1919-20 he served as commandant of the R.A.M. College, and after retirement was appointed house governor and medical superintendent of the Osborne Convalescent Home for Officers, relinquishing the post in 1931. From 1927-33 he was a colonel-commandant of the R.A.M.C. Among many other activities he was principal medical officer of the National Rifle Association from 1908 to 1914 and was in medical charge of the Wembley Exhibition. Early in the century he served for some years as surgeon major in the Scots Guards. He was granted many well-deserved honours: C.B. in 1915; C.M.G. in 1918; K.C.B. in 1925; K.C.V.O. in 1931; Honorary Surgeon to the King in 1923. He also held the French Croix de Guerre and the Belgian Order of King Leopold. He was president of the Southern Branch of the B.M.A. in 1929-31 and chairman of the Isle of Wight Division in 1928-31.

Major-General CHARLES HARFORD BOWLE-EVANS, C.M.G., C.B.E., M.C., I.M.S. (ret.), died at Cheltenham on Aug. 23, aged 74. He was born at Tewkesbury on Oct. 19, 1867, the son of Lieut. John Bowle-Evans, Rifle Brigade (ret.), and was educated at the University of Cambridge, where he graduated B.A. in 1889 and M.B., B.Chir. in 1894, subsequently taking the D.P.H. in 1910, and at St. Bartholomew's Hospital. He entered the I.M.S. as surg. lieut. in 1894, became col. in 1920, major-gen. in Sept., 1923, and retired in the following Dec. He was appointed Director-General of Medical Services in India in 1923 in succession to Sir C. H. Burtchall, but only held the post for two months, having to retire on account of ill-health. He was the first I.M.S. officer to hold that post, except that the late Sir C. P. Lukis held it for a few months during the war of 1914-18. He received the C.M.G. in 1915, the C.B.E. in 1920, and in 1923 was appointed Honorary Physician to the King. He had a long list of war service: North-West Frontier of India, Waziristan, 1894-5 (medal with clasp); Chitral, 1895, action of Malakand Pass, relief of Chitral (medal with clasp); China, 1900 (medal); and the war of 1914-21, when he was twice mentioned in dispatches and gained the M.C.

Medical Notes in Parliament

Mass Radiography

Mr. JAMES GRIFFITHS asked Mr. Brown on Oct. 8 for a statement on tuberculosis. Mr. Brown replied that the committee which was appointed by the Medical Research Council at his request had completed its report, which was published that day. He had taken action on a number of points included in the recommendations. To facilitate early diagnosis the Ministry of Health obtained priority for the supply of some 30 sets of equipment for mass radiography. It was allocating them to large centres of population where they could be used to the best advantage, and in consultation with local authorities and with the assistance of an expert committee it had arranged for the training of the necessary staff to operate this equipment. Deliveries of the equipment would be gradual. Arrangements for operation in the individual districts and for co-operation between authorities had to be worked out in detail. He expected that an effective start will be made in the New Year. Additional beds were being allocated and action was being taken to meet the needs for nursing and domestic staff. Where facilities for diagnosis and treatment were available it was important that those who give up work temporarily for treatment should be able to do so without anxiety as to the maintenance of their dependants. Local authorities were accordingly being authorized to grant financial assistance in such cases for the maintenance of dependants and to avoid breaking up the home while the breadwinner underwent treatment. This assistance would be administered by the public health authorities as a part of the approved treatment under the tuberculosis scheme. The cost would be repaid from Exchequer funds. Mr. Johnston was making similar arrangements in Scotland.

Dr. SUMMERSKILL asked what Mr. Brown was doing to reduce the incidence of non-pulmonary tuberculosis, which could be traced to milk. Mr. BROWN said the Ministry of Health was in touch with the other Ministries concerned in that matter. Captain ELLISTON asked whether the mass radiography sets would be available for selected counties and county boroughs where the medical officer of health had submitted an approved scheme. Mr. BROWN said the Ministry would work in co-operation with the local authorities. Sets were transportable but were best kept at places where they could be used for a period. The work would be done in connexion with the arrangements at local sanatoria. Men discharged from the Army who were tuberculous would come under the general arrangements of the scheme. Sir FRANCIS FREMANTLE asked whether Mr. Brown would consult the Ministries of the Fighting Services so that these would use the sets to prevent tuberculous men getting into the Services. Mr. BROWN replied that the Services had taken the initiative in the use of mass radiography.

Duodenal Ulcers in Invalided Men

Sir IRVING ALBERY asked the Secretary of State for War on Oct. 13 how many men had been invalided out of the Service suffering from duodenal ulcers, and if any inquiry had been made about the cause. Sir JAMES GRIGG said that it was not in the public interest to give the precise figures, but the proportion of men invalided from the Army suffering from duodenal ulcers was about 11% of the number invalided on account of all diseases. There was no evidence to show that Army life rendered men more liable to duodenal ulcers than they would be in civil life, and he was satisfied that no special inquiry was necessary.

Yellow Fever.—On Oct. 13 Sir JAMES GRIGG said that three cases of yellow fever had been diagnosed in British troops in areas in which they had been stationed since the commencement of the present war. Vaccination against yellow fever of British troops proceeding to yellow fever endemic areas was introduced before the war, and had been continued without interruption. Most of the vaccine used was manufactured in this country, but some supplies were obtained from the U.S.A.

Routine Tuberculin Test for Children.—Sir E. GRAHAM LITTLE, on Oct. 13, asked the Minister of Health whether, in view of the rise in the incidence of tuberculosis, especially in children under 5, and of the present impracticability of wider use of radiography in detecting tuberculosis, he would impress on medical officers under his jurisdiction the diagnostic value, especially in the case of infants and young children, of properly performed tuberculin tests. Mr. BROWN replied that the report of the committee of the Medical Research Council on Tuberculosis in Wartime stressed the importance of the routine use, in all tuberculosis dispensaries, of the tuberculin test in children particularly. The report was being brought to the notice of all medical officers of health of tuberculosis authorities.

Notes in Brief

It has been decided to appoint a woman naval surgeon at one of the W.R.N.S. establishments. Other appointments are under consideration.

The sensitivity of certain persons to national flour is at present under consideration by the Food Rationing (Special Diets) Advisory Committee of the Medical Research Council.

Supplies of quinine are adequate for a considerable period.

Medical News

The Duke of Gloucester has accepted the post of President of King Edward's Hospital Fund for London, in succession to the late Duke of Kent. He is the sixth member of the Royal Family to hold the presidency. Since its foundation in 1897 by King Edward VII, when Prince of Wales, the fund has distributed £10,500,000.

The Section of Comparative Medicine of the Royal Society of Medicine opened its 1942-3 session on Oct. 21. Further meetings have been arranged for Dec. 16, Feb. 17, and April 14, and, like the first, will be devoted to aspects of immunity.

The Royal College of Nursing (Henrietta Place, Cavendish Square, W.1) has arranged a dietetic course for nurses. In planning the course the College has had help from the Ministry of Food and from members of the British Postgraduate Medical School staff, many of whom will give lectures to the students. Practical experience will include six months in the Hammersmith Hospital dietetic department, a month in the main kitchen and stores department of the London Hospital, and short periods in dietetic departments and clinics of other London hospitals.

Concentrated orange juice is to be distributed to children at welfare centres and food offices in place of the blackcurrant juice of last winter. It is prepared according to specifications of the Ministry of Food by pharmaceutical firms possessing the necessary plant, from concentrated orange juice imported from America. Special precautions are taken to prevent contamination and to ensure a minimum loss of vitamin C. The label states that the vitamin C content is 60 mg. ascorbic acid per fluid ounce, or about 160 mg. per 100 grammes. The juice should be kept in a cool dark place. The Ministry of Food states that small air bubbles in the neck of the bottles are due to shaking during transport and not to fermentation.

The Board of Education has issued a leaflet, "War-time Diet in Boarding Schools," being Memorandum No. 34 of the series on the Schools in War-time. There is a foreword by Sir Wilson Jameson. Copies (price 2d.) can be obtained through any bookseller or direct from H.M. Stationery Office.

Dr. John Young of Wimbledon Common, London, formerly of Blackpool and of Glasgow, among a number of legacies to hospitals and other charities, bequeathed £1,000 and a share of his residuary estate to the Royal Medical Benevolent Fund. Mr. H. B. Grimsdale, F.R.C.S., bequeathed, subject to his wife's life interest, £500 each to the R.M.B.F., the Westminster Ophthalmic Hospital, and the Royal College for the Blind, Norwood.

No. 39

INFECTIOUS DISEASES AND VITAL STATISTICS

We print below a summary of Infectious Diseases and Vital Statistics in the British Isles during the week ended Oct. 3.

Figures of Principal Notifiable Diseases for the week and those for the corresponding week last year, for: (a) England and Wales (London included). (b) London (administrative county). (c) Scotland. (d) Eire. (e) Northern Ireland.

Figures of Births and Deaths, and of Deaths recorded under each infectious disease, are for: (a) The 126 great towns in England and Wales (including London). (b) London (administrative county). (c) The 16 principal towns in Scotland. (d) The 13 principal towns in Eire. (e) The 10 principal towns in Northern Ireland.

A dash — denotes no cases; a blank space denotes disease not notifiable or no return available.

Disease	1942					1941 (Corresponding Week)				
	(a)	(b)	(c)	(d)	(e)	(a)	(b)	(c)	(d)	(e)
Cerebrospinal fever	61	7	19	—	3	94	7	30	—	1
Deaths		—	—				—	2		
Diphtheria	860	43	200	72	26	1,066	44	282	31	36
Deaths	20	—	2	2	—	28	1	4	—	3
Dysentery	232	19	36	—	—	89	10	71	—	—
Deaths				—	—				—	—
Encephalitis lethargica, acute	3	—	—	—	—	6	—	—	—	—
Deaths		—	—				—	—		
Erysipelas		—	53	4	4		—	44	4	2
Deaths		—	—				—	—		
Infective enteritis or diarrhoea under 2 years				97						
Deaths	72	6	19	23	8	43	2	19	31	7
Measles	3,801	223	185	13	28	745	35	9	40	1
Deaths	6	—	—	—	—	—	—	—	—	—
Ophthalmia neonatorum	95	2	16	1	—	98	4	25	1	—
Deaths										
Paratyphoid fever	• 5	—	9	—	—	100	10	13	—	—
Deaths	—	—	—	—	—	1	—	—	—	—
Pneumonia, influenzal*	508	19	4	—	—	485	19	6	—	3
Deaths (from influenza)	12	1	1	1	1	3	17	—	1	4
Pneumonia, primary			161	13	1			158	8	
Deaths				3	7				2	—
Polio-encephalitis, acute	6	—				3	—			
Deaths		—					—			
Poliomyelitis, acute	33	4	3	21	1	38	3	4	2	1
Deaths		1	—				—	—		
Puerperal fever	—	1	25	2	—	—	—	9	1	—
Deaths		—					—			
Puerperal pyrexia	172	11	16		3	123	6	7		1
Deaths										
Relapsing fever	—	—			—					—
Deaths										
Scarlet fever	2,423	155	455	62	34	1,258	38	199	55	30
Deaths	3	—	1	—	—	1	—	—	1	—
Small-pox	—	—	—		—	—	—	—		—
Deaths			—	—	—			—	—	—
Typhoid fever†	6	1	2	17	5	32	4	5	9	1
Deaths	—	—	—	—	—	2	1	—	—	—
Typhus fever	—	—	—	—	—	—	—	—	—	—
Deaths			—	—	—			—	—	—
Whooping-cough	845	98	17	37	5	2,247	214	81	44	17
Deaths	13	3	—	2	—	45	1	2	—	—
Deaths (0–1 year)	337	41	63	41	28	293	19	63	47	23
Infant mortality rate (per 1,000 live births)										
Deaths (excluding still-births)	3,740	507	548	189	104	3,697	456	514	166	133
Annual death rate (per 1,000 persons living)			12·3	12·6	‡			11·2	11·0	‡
Live births	6,200	713	845	426	265	5,105	474	899	355	221
Annual rate per 1,000 persons living			17·5	28·4	‡			18·3	23·6	‡
Stillbirths	201	32	27			187	14	49		
Rate per 1,000 total births (including stillborn)			31					52		

• Includes primary form for England and Wales, London (administrative county), and Northern Ireland.

† Includes paratyphoid A and B for Northern Ireland.

‡ Owing to evacuation schemes and other movements of population, birth and death rates for Northern Ireland are no longer available.

EPIDEMIOLOGICAL NOTES

Discussion of Table

In *England and Wales* the outstanding features of the returns were the large rise in the notifications of scarlet fever and measles—460 and 445 respectively in excess of last week's totals—and the continued prevalence of dysentery, which was only 5 below last week's record level. There was a rise in the incidence of diphtheria, 53 cases, and acute pneumonia, 49, while there were 93 fewer notifications of whooping-cough than in the preceding week.

The returns for scarlet fever showed small rises for most areas, although the increase was most pronounced in the North: Yorks West Riding 128, Lancashire 49, Staffordshire 35.

The only noteworthy local increase in the incidence of diphtheria was in Durham, where 33 cases in excess of last week's total were recorded. Diphtheria is more prevalent in the northern section of the country than in the southern, and the three counties of Lancashire 140, Yorks West Riding 104, and Durham 97 cases account for 40% of the total for the country.

The rise in the incidence of measles was fairly general throughout the country, the only large increases being in Yorks West Riding 169, and Cheshire 121 cases. Of the 791 cases notified in the former county 224 were in Leeds C.B., and of the 296 cases in the latter county 71 were in Bebington M.B. The most notable exceptions to the increasing trend were those of London and Warwickshire with 48 and 27 fewer cases than in the previous week.

In *Scotland* there were further increases in the incidence of scarlet fever and measles. The weekly notifications of scarlet fever have risen from 275 to 455 during the past four weeks; the largest totals during the present week were for Glasgow 102, and for Edinburgh 77. Notifications of measles have steadily risen during the past five weeks from 72 to 185, the principal centres of infection being Dundee and Paisley Burgh, with 49 and 48 cases respectively.

In *Eire* the relatively high incidence of poliomyelitis was maintained, 8 of the 21 cases being notified in Dublin. An outbreak of typhoid in the rural district of Dingle, Co. Kerry, accounted for 14 of the 17 cases notified.

Dysentery

The high incidence of dysentery recorded last week in England and Wales was repeated again during the week. The largest of the new outbreaks was 19 cases in Hertfordshire, Elstree R.D. An increase occurred in the two centres of infection in Wales: in Caernarvon, Conway M.B., the number of cases rose from 5 to 13, and in Glamorganshire, Cardiff C.B., from 6 to 30. In Southampton there was an increase of from 15 to 21 (Basingstoke R.D. 8, Droxford R.D. 13). The number of cases in Yorks North Riding, 25, was the same as in the preceding week (Middlesbrough C.B. 25). The outbreak in this town has caused 9 deaths: 8 of them were in children under 4 and the other in a person of 50. The cause of the outbreak has not been determined; bacteriological examination of milk, water, and ice-cream yielded negative results. In Essex the total declined from 39 to 33; no further cases were reported in Chelmsford R.D., where 27 cases were notified last week: this week's cases were in Colchester M.B. 17, and in Hornchurch U.D. 16. The incidence in Norfolk declined from 40 to 13 (Norwich C.B. 12); the large outbreak in the preceding week, 30 cases in Swaffham R.D., produced only one further case.

Other county totals of note during the week were London 19, Middlesex 11, Surrey 10; these were distributed among several administrative areas within the county.

Small-pox

According to a Press statement on Oct. 17, 10 more cases of small-pox have appeared in Methilhill, Fife, bringing the total up to 21. The County M.O.H. is reported as having said that there is a possible connexion between the Methilhill and the Glasgow outbreaks.

Returns for the Week Ending October 10

The notifications of infectious diseases in England and Wales during the week included the following: scarlet fever 2,613, whooping-cough 972, diphtheria 991, measles 4,650, pneumonia 541, cerebrospinal fever 57, acute poliomyelitis 23, dysentery 209, paratyphoid 11, typhoid 6.

The Minister of Health, at the opening of a wartime nursery at Hull, said that during the present month the thousandth nursery for women war workers' children would come into operation. At the end of September there were 937 nurseries opened in England and Wales, caring for 40,000 children under 5 years of age.

Letters, Notes, and Answers

All communications in regard to editorial business should be addressed to The Editor, British Medical Journal, B.M.A. House, Tavistock Square, London, W.C.1.

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QUERIES AND ANSWERS

Glasses after Operation for Cataract

"Cataract" writes: Will any sufferer who has had his lenses successfuly removed inform me if bifocal glasses are satisfactory; and if cemented segments are necessary, or can the bifocals be cut out in one piece? If so, can this be done with Percival lenses? I have slight astigmatism.

Any Old Bones?

"Enquirer" would be grateful to learn where a medical student can obtain a set of bones or a half skeleton.

Death by Lightning

Dr. H. M. Stanley Turner writes: In 1936 a paper entitled "Electrical Traces" was read before the Royal Society of Edinburgh by Prof. Jellynek, who occupied the chair of electropathology in Vienna University. It was illustrated by films, and the author claimed that high-potential electrical discharges through the living tissues of plants and animals left what he termed "electrical traces" in the tissues concerned. He stated that these took the form of curves or spirals which could be easily identified in sections under the microscope, and illustrated his claims by slides of photomicrographs upon the screen. If Prof. Jellynek's claims are confirmed such findings would be of potential importance to medical jurists, and it would be interesting to know whether there has been confirmation from other sources. This inquiry is prompted by "Notes on a Case of Death by Lightning" in Medical Memoranda in your issue of Oct. 10, 1942.

Aspirin for Asthma

Dr. Alexander Francis (London, W.1) writes: It has long been known that aspirin relieves asthma in many cases, but now that so much prominence has been given to the fact by the letters of A. K. (Sept. 19, p. 356) and others, it is well to repeat the warning which I first sounded in the *British Medical Journal* (Aug. 16, 1919)—that there is great danger in giving aspirin to a patient with nasal polypi. If a patient with a history of nasal polypi has a high blood pressure the risk is not great, but in low blood pressure cases most alarming symptoms are likely to be instantly produced, which is further evidence, if such were needed, of the vasomotor origin of asthma.

Dr. W. Lees Templeton (Highgate, N.6) writes: It is an extraordinary fact that whenever the logical explanation of the action of a drug in any condition is that it is homoeopathic the orthodox practitioner will go out of his way to suggest that it is faith or hope, but never charity—to wit, homoeopathy! Aspirin in some people will produce asthma. Asthma in some people will be relieved by small doses of aspirin! Need one go further?

Income Tax

Two Separate Appointments—Expenses

"Y. Z." holds an appointment as assistant radiologist at one hospital and another appointment as visiting radiologist at the municipal hospitals. Salaries are paid separately; no private practice is allowed. The inspector of taxes states that as the two appointments are assessable separately no travelling expenses are allowable.

*** Assuming that "Y. Z." cannot show that the holding of one appointment is a condition attaching to the other the inspector is legally correct, though the result is rather unfair on our correspondent. If, however, there are two or more municipal hospitals, "Y. Z." can claim such part of his car expenses as fairly represents the amount spent on travelling between them.

Travelling Expenses—Use of Car

"Q. Q." is attached to an R.A.F. camp as a medical specialist. Mess accommodation is limited and he lives four miles away from the camp. He has to be available for emergencies. Can he deduct the cost of maintaining a car—including the depreciation for travelling to and from the camp?

*** The legal rule is strict—the expense of travelling between the place of residence and the place of work is not regarded as incurred "in the performance of the duties"—and we are not aware of any concession covering the facts. It might, however, be worth while writing to "The Chief Inspector of Taxes, the Hydro, Llandudno, N. Wales," explaining the circumstances and inquiring whether some concession cannot be made to meet the equity of the case for an allowance.

Change in Nature of Appointment

"M.R.C.S." was employed as a house-surgeon from Nov. 28, 1940, to March 31, 1942. He began work as assistant tuberculosis officer at £724 per annum less 6% for superannuation as from April 20, 1942. On what amount should he be assessed for 1942-3?

*** He is not entitled to be assessed on the basis of the previous year; the difference in the work and the terms of remuneration are such as to constitute his present appointment a new source of income. On the facts stated his liability for 1942-3 is as follows:

	£ s. d.	£ s. d.
Gross earnings April 20, 1942, to April 5, 1943—i.e., 350/365ths of £724	693 0 0	
Less superannuation deduction	41 0 0	
Amount of gross assessment		652 0 0
Allowance for married man	140 0 0	
Allowance for earned income (1/10th of £652)	65 0 0	
		205 0 0
Amount of net assessment		£447 0 0
	£ s. d.	
Tax on £165 at 6s. 6d. in the £	53 12 6	
Tax on £282 at 10s. in the £	141 0 0	
		194 12 6

(Of this amount £32 should ultimately be received by "M.R.C.S." in the form of a post-war credit.)

Repayment Claim—Agent's Commission

"BETA'S" accountant has charged him £25 (i.e., 10%) for his services in obtaining repayment of £257. Is this the usual practice?

*** Professional accountants base their charges not on a percentage of the amount repaid but on the time spent on the case and on its degree of difficulty. Repayment agents frequently adopt the percentage basis, and 10% is not uncommon. Whether, in fact, £25 was a reasonable charge really depends on just what the agent had to do by way of preparing special statements, collecting evidence of what tax had been suffered, and so on.

LETTERS, NOTES, ETC.

Home Drying of Fruit and Vegetables

Mr. B. G. MCLELLAN, F.I.C., has produced a practical leaflet on "Home Drying of Fruit and Vegetables," which should be of interest to medical men who possess gardens or orchards and wish to preserve surplus vegetables or fruit for winter use. We understand that the author (Beverley House, Clifton, York) is willing to send copies to doctors on receipt of a stamped and addressed envelope.

Bleeding Tooth Sockets

Mr. JOSEPH ANGELMAN (Colchester) writes: I have read with interest the letters dealing with the arrest of dental haemorrhage sent by Dr. Le Fanu (Aug. 15, p. 208), Dr. J. T. Maclachlan (Sept. 19, p. 356), and Dr. S. Jung (Oct. 10, p. 444). I have never been able to understand why the doctor, when dealing with oral and dental tissues, should forget the elementary principles of surgery. Would Dr. Jung plug a bleeding cavity elsewhere in the body with a cork? I think not. Similarly, I am sure Dr. Le Fanu would be very chary about using the silver nitrate stick to arrest haemorrhage from cavities other than in the mouth. The treatment of dental haemorrhage demands the arrest of bleeding without injury to the surrounding soft tissues. Silver nitrate is a very powerful escharotic and when in contact with the oral tissues rapidly destroys them. As a dental surgeon may I suggest the following procedures. Examine the bleeding area; if there is a gentle oozing and remains of a blood clot, remove the latter and wash out the socket with warm water. Place a small pad of gauze, which may be impregnated with some styptic such as tannic acid, over the socket; over this place larger pieces of gauze or lint, and instruct the patient to bite reasonably hard, and to maintain pressure for a minimum of five minutes. It is the pressure which is important. In many cases this will suffice. If there is a more persistent flow from the socket, especially from one point, it indicates a partially ruptured arteriole in the mucoperiosteum surrounding the socket. Suturing is the ideal method of treatment. Place a suture through the buccal and lingual (palatal, as the case may be) mucoperiosteum, and draw the tissue against the bony walls of the socket, thus compressing the bleeding-point. Tie the suture over the socket opening. In the vast majority of cases this will immediately arrest the haemorrhage. When dealing with the true bleeder type where the persistent haemorrhage is due to some systemic or haematogenous factor, the local treatment should be supplemented with intramuscular haemoplastin, which is very successful. In very severe cases continued pressure by closure of jaws with a bandage may have to be used. The treatment of the haemophiliac patient does not come within the scope of this letter.

Conjoined Twins

Dr. JAMES A. ROOTH (Brighton) writes: I was much interested in the report of a case of conjoined twins by Dr. E. Ridehalgh (July 4, p. 10). In 1909 I had a case of this sort, but the course it took was very different. The twins were joined back to back and the point of union was the coccyx; the union was thought to be cartilaginous, but the movement was very restricted, though evidently much more than in the case you report. The labour, however, was practically uncomplicated and lasted about 16 hours, the mother being a young primipara of 21. The first twin was born by a vertex presentation in the first position after a slight delay which revealed the true state of affairs; the second was delivered in a similar manner. The process was evidently one of evolution of the second or podalic child, and this seems to have been the method of birth in the few similar cases recorded; in each case the second child underwent evolution owing to traction of the ligament. It will be seen that there was no undue delay, no anaesthetic, and no laceration of the mother, which was remarkable seeing that the twins weighed 13 lb. together. The chief points of difference between the two cases are that there was freer movement in my case, and that the twins lived and are still alive in America, and have, I believe, made a good living on the variety stage.

MEDICINE 100 YEARS AGO

Extract from a clinical lecture delivered at the Westminster Hospital by Mr. G. J. Guthrie, printed in the *Provincial Medical Journal*, October 22, 1842:

"It appears that some gentlemen wish to run down this hospital, both as relates to the relief the poor receive, and the instruction which students may obtain at it, by inveighing strongly against the management which does and does not take place within its walls. I regret very much that many of the assertions of mismanagement are, in all probability, true as relates to the medical arrangements, several of which are not, in my opinion, fitting for a public hospital in London. They are all of them, however, good, and well adapted for a parish infirmary; and as long as it may be thought right to continue them, the hospital must remain in a depreciated state, both as a place of refuge for the sick poor, and as a school of instruction. When things become so bad that any change must be for the better, we may hope for improvement, and I care not how soon this takes place, for I confess I shall look forward with the hope that this hospital will then rise from its remains, and assume that character, and obtain that reputation, it never can have under existing circumstances. I have done my endeavour to remove the abuses and grievances of which I am sensible; but I abhor all disputes and squabbling, more particularly when they become personal, and I have no wish to contend with gentlemen whom I personally respect, although I believe them to be in error; and even if I thought it right to do so, I have not the time to spare which the forms of the hospital require.

"With respect to you as students, I have not recommended one to come here; I have not invited you in any way. You came because it suited your own views, and, being here, I am at all times happy to give you every information in my power. My days of attendance are Tuesdays and Saturdays, according to the rules of the hospital; but you will see a notice in the hall that I also attend on Thursdays, believing that every physician and surgeon should see every particular case three days a week, and when I have anyone in danger I visit him every day. You need never expect me before a quarter past one, and never wait for me after a quarter past two, before which time the assistant-surgeon will go round with you if I should be absent; and whenever he does the duty of one of the surgeons, he ought to receive a regulated proportion of the money which the seniors derive from the fees which you pay for permission to attend. I am never so contented as when you make yourselves constantly known to me, by obeying my injunctions, so frequently repeated, of walking up to me and repeating your names in my face."